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ABSTRACT

Proposing that teachers can help children learn more effectively by promoting metacognition and the acquisition of problem solving strategies, this report describes research studying the effectiveness of the experimental curriculum, Informed Strategies for Learning (ISL), in increasing third and fifth grade students' reading comprehension skills. Using a pretest-posttest design, the reported study revealed significant gains in reading comprehension and reading skills among the ISL group. The appendix of the report contains instructional materials, grouped in 14 comprehension skill training modules, designed to develop metacognitive awareness and reading comprehension. Each module includes graded skills to be targeted weekly, the rationale for teaching them, instructional techniques, specific lesson plans for teacher use, and bulletin board ideas to supplement lessons. In addition, this section contains worksheets and assignments for student use. (MM)

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Final Report

to the

National Institute of Education

"Metacognition and Reading Comprehension Skills"

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Abstract

Children's awareness about their own cognitive skills, or metacognition, has been hypothesized to play a major role in learning and development. This role was examined in an experimental study of third and fifth grader's reading comprehension skills. Children in four classrooms were given an experimental curriculum, Informed Strategies for Learning (ISL), that was designed to increase children's awareness and use of effective reading strategies. ISL included four months of direct, whole group instruction based on concrete metaphors for reading strategies. The effectiveness of ISL was tested in a pre-posttest experimental design. Children who participated in ISL scored significantly higher on measures of reading comprehension and awareness about strategies, although the effects were stronger for third graders. This study demonstrates the importance of metacognition for children's reading as well as providing a model for translating strategic awareness into pragmatic classroom instruction.

Summary

Informed strategies for Learning (ISL) is an experimental curriculum designed to teach elementary school children how to use comprehension strategies while they read. ISL is an adjunctive program that was designed to supplement classroom reading instruction and it is not restricted to a particular basal reading series nor grade level. It was created as a group administered program of instruction suitable for the entire class. The key features of ISL are:

a. teachers provide information about reading strategies directly,

b. metaphors for various reading strategies offer concrete vehicles for communicating about thinking,

c. students talk about how, when, and why to use comprehension strategies, and

d. bulletin board displays and worksheets reinforce the skills that are taught.

Background of ISL

Throughout the 1970s research in educational and developmental psychology demonstrated the importance of cognitive strategies for children's learning. Strategies are tactics for solving problems. Children who understand the usefulness of the strategies and who have the motivation to apply them can direct their own reading and learning. Self-controlled learning strategies are important for reading comprehension because students must be able to allocate attention selectively, to read for different purposes, to check their own understanding as they read, and to adjust their reading to fit the task and situation.

During this same time researchers in psychology and education discovered that children's awareness about their own thinking influenced how they used strategies for memory, attention, and reading. The term "metacognition" was coined to capture the knowledge that people have about their own reasoning skills. Young children and novices in many skill domains seem to lack metacognition. They have little understanding about the task beforehand, the need to learn strategies, or their own limited abilities. Such naivite is hardly surprising for young learners but it also seems to be a characteristic of older children who experience difficulty in school. The clear implication is that we might be able to help children learn more effectively if we promote their metacognition and acquisition of problem-solving strategies.

The Experimental Research

This orientation to reading provided the foundation for ISL. We wanted to provide a program of instruction that would help children understand how reading strategies can improve comprehension. Tactics such as skimming, rereading, and making inferences are important and necessary. ISL teaches children the what, how, when, and why of using strategies. In a sense, ISL was designed as a field test of the latest research ideas on children's reading skills. But we also wanted to make the program practical for classroom teachers. Thus, we designed ISL as a series of short lessons that could be presented to the entire class several times each week. Public discussions and explanations about reading are critical components of ISL. Teachers explained various strategies, asked students to talk about them, and provided exercises for students to practice the new skills.

During the 1980-81 school year we tested ISL in two third grade and two fifth grade classes in Ann Arbor. A trained reading teacher provided half-hour lessons to each class twice a week for four months. Special bulletin boards and worksheets were designed to communicate the strategies by using different metaphors, e.g., "Be a Reading Detective." It has taken us nearly two years to analyze the extensive data that we collected from the children in pre- and post-tests but the results are very positive. The data revealed significant improvements in children's awareness and comprehension scores compared to four control classes who did not participate in ISL. Chapters 2 and 3 report the methods and data analyses in detail.

ILS Materials

The program initially was designed as 14 instructional modules divided into groups that emphasized awareness of strategies, comprehension skills, and monitoring skills. The modules are organized in a sequence of instruction that begins with general strategies for confronting text and builds to specific strategies for refining comprehension. Appendix A includes all 14 instructional modules.

Each module includes two lessons that present the strategy and describe how to use it. All lessons emphasize the importance of using the strategies and the value of them. In fact, the consequences for comprehension of not using them are also noted frequently. Each module includes objectives, background information on the strategy, description of the bulletin board, materials needed, outlined lesson plans, and copies of reading materials and worksheets.

We also constructed bulletin board displays to accompany each module and to illustrate the strategies with concrete metaphors. Each display includes a title, focal questions to ask about the strategy, and several pieces to illustrate the metaphor (e.g., construction paper figures of a detective, magician, judge, etc.). Each one is designed to fit onto a 5' x 5' bulletin board and they make large, colorful classroom learning aids.

Conclusion

Our program of research has a strong theoretical and empirical foundation. It was designed to provide a rigorous test of the role of metacognition in children's reading and learning. An equally important objective, though, was to provide a field test of an innovative, pragmatic curriculum for helping children's reading. Chapter I of this final report presents a theoretical discussion of the importance of metacognition and strategies. Chapter 2 is a formal report of the data on children's reading awareness and comprehension. Chapter 3 illustrates the effectiveness of the instructional program. The teaching materials, lesson plans, and bulletin boards are outlined and sketched in Appendix A.

Chapter 1

Becoming a Strategic Reader

Most educators today would agree that a fundamental goal of education is to teach children to become self-directed learners who seek to acquire new information and to master new skills. Self-controlled learners plan, evaluate, and regulate their own skills and they develop an enduring interest in learning. Reading is part of this development and most teachers try to help children to become self-controlled learners with continued motivation to read. Because the learner's intentions, choices, and efforts underlie self-controlled reading, strategic behavior is clearly involved. Indeed, we will argue that investments of time and energy in various courses of action as children read are evident in many different reading behaviors from decoding individual words to studying main ideas in text.

Learning to be strategic is rooted in both development and instruction. The failure to be strategic in reading may result from either developmental inability or poor learning but we know that good readers use more strategies as they read and they use them more effectively than poor readers (Ryan, 1981). Considerable research in other domains such as mathematics, memory, and problem-solving (e.g., Brown, 1975; Kail & Hagen, 1982; Resnick & Ford, 1981; Siegler, 1983) reveals that a major distinction between experts and novices in any domain is self-controlled strategic behavior. Strategic problem-solving improves dramatically between five and twelve years of age and helps children communicate, read, write, and remember more effectively (Paris & Lindauer, 1982). Schools provide appropriate instruction and opportunities for practice that facilitate children's learning to be strategic (Rogoff, 1982; Wagner, 1981). Thus, schooling and development are intertwined in children's acquisition of strategic behavior.

An analysis of strategic reading can show how the notion of "strategy" extends traditional boundaries of skilled behavior. For example, recent emphases on metacognition have introduced new dimensions to our analyses of reading. Awareness about the utility and appropriateness of various actions accompanies improvement in reading and may be a causal factor (Baker & Brown, 1982; Myers & Paris, 1978). Strategic behavior connotes intentionality and purpose on the part of the learner. It suggests that a person chooses one alternative action over others. Motivation and metacognition arise in part from the social interactions of instruction and analyses of these factors must consider the entire learning context and not just the target behaviors in isolation. We believe that the interrelations among awareness, motivation, instructional agents, and strategic behavior have not been discussed adequately. Consideration of each one separately seems to ignore children's understanding of the value of the instructed actions and whether or why they choose to actually use them. Our focus on strategic reading requires consideration of the interrelationships and may provide a more comprehensive view of reading skills and instruction.

Strategic Learners and Developing Skills

If you were playing tennis and hit a lob shot just as your opponent rushed the net, your strategy would be admired. Similarly, if you mapped out an efficient path for your shopping errands, your planfulness would be commendable. But if you accidentally hit a lob shot or ended up at the right stores by chance, you would be lucky not strategic. These examples characterize the central theme of our paper; agents are strategic, not behavior removed from its context and function.

What defines strategic behavior? To us, it seems that three ingredients are required; a capable agent, an attainable goal, and an allowable action that the agent can perform to reach the desired end state. However, goals are often reached by luck or circumstance and not by effort or choice. In order for an action to be strategic, it must be selected by the agent from alternative actions and it must be intended to attain the specific goal. Thus, the reader who happens to find the main idea of a paragraph by reading only the topic sentence could be correct and lucky but not necessarily strategic. Unless a reader acts in a selected manner to achieve a particular purpose, it is superfluous and erroneous to label the action strategic. Hochberg and Brooks (1970) point out that goal-directed behavior requires intent and effort; "The reader does not merely regard a block of text and immediately realize its message. He must intend to read the display, must 'pay attention" to its meaning if he is to be able to respond to its contents" (p.304).

Notice that reading goals can be specified by the agent or by someone else. Likewise, alternative actions could be provided explicitly by a teacher. But even in this structured situation, the learner must choose one action to reach the goal and the choice reveals the agent's intentions, perceived value of the action, and expectations for success. (For the moment, we shall ignore common situations where children choose no action, disdain the entire activity, or supply their own purposes or actions.) The critical element of a cognitive strategy employed by a learner is the intentional, effortful, self-selection of a means to an end (Paris, 1978).

Strategies are deliberate actions and therefore are available for introspection or conscious report. They may not always be accurate or useful but strategies are identifiable to the agent and to others by intentions and selected goal states. In a sense, strategies are skills under consideration in much the same way that Vygotsky (1978) described "defossilized" actions. Over the years psychologists have referred to this type of awareness with a variety of apellations including introspection, reasoning, problem-solving, and metacognition. In whatever guise we choose as a label, thinking about one's thinking is at the core of strategic behavior. Whether we consider task goals, intentions, plans, and expectations for success beforehand or whether we ruminate retrospectively over our past successes and failures with various attributions and rationalizations, our purposes, goals, and actions are being scrutinized. Such reflective thinking is a major milestone in childhood and a basic ingredient to learning in many situations (Brown, Bransford, Ferrara, & Campione, in press).

Researchers today routinely interchange words such as "process," "information-handling technique," "action," "skill," and "strategy" with the unfortunate consequence of depersonalizing the notion of strategy. We believe that the attributes of human agency, including intentionality, responsibility, and self-efficacy, need to be reaffirmed in current accounts of learning and cognitive development. These characteristics can augment especially our knowledge about how children learn to read and they can inform our instructional practices.

Consider for a moment how skills can differ from strategic behavior. Popular accounts of skill development such as Gagné (1977) or Fischer (1980) emphasize accretion, intercoordination, and refinement in behavior during learning and development so that individual responses become aggregated into automatic sequences of complex actions. Skills are continuous changes in performance according to various criteria (e.g., speed, accuracy, complexity) that are often judged against normative standards. Thus, comparative judgments are often made such as, "She has good soccer skills for an eight-year-old or "He writes well given his IQ score." Strategies are not necessarily different actions; they are skills that have been taken from their automatic contexts for closer inspection Complex skills can be subdivided into components for examination and mastery. Importantly, these "defossilized" skills can be observed by both self and others; they can be shared, debated, and analyzed. Furthermore, strategic behavior adds motivational intent to skills and a personalized point of reference. Recalling prose, for example, can be attained with many idiosyncratic strategies and not with just one uniformly and universally effective method.

Because strategic actions are, in a simplified sense, skills that are made deliberate, it follows that a "strategy" can mirror any level of skill. Indeed one could argue that deliberate, strategic allocation of effort to mimic a modelled behavior is often a precursor to skill acquisition. A young reader who tries to guess unknown words from the title or pictures accompanying a story may be reading strategically as is the speed-reader skimming through a long text. Strategies vary in level of expertise according to the underlying actions that are accomplished. Those criteria depend on the task difficulty and normative standards. The utility of the strategy, though, is a crucial characteristic because utility is a relative measure. It depends on the contextual appropriateness of the action, intentions and capabilities of the agent, available alternatives, and the "costs" to the individual. These criteria are determined by the individual agent. Thus learners can vary greatly in their perceptions of useful actions and their applications of the actions to different situations.

Being a strategic reader can be cumbersome, though. It takes time and effort to consider one's goals, plans, available actions, and so forth while reading. Indeed such forethoughts and afterthoughts may impede automatic, skilled reading. What is the value of reading strategically? A major benefit is that reading becomes public. Students can analyze and talk about their own behavior. Teachers can isolate component actions to model and evaluate. Sharing knowledge during instruction helps students to understand how and why they should use particular tactics. (If neither party can discuss the intended means-goal connection, it seems unnecessary to label it a "strategy" and an imprudent, unverifiable inference about intent.) Discussing, understanding, and applying strategic actions are especially important in three reading situations; during initial learning, for troubleshooting, and when processing capacity is exceeded (e.g., the task is too difficult or the subject is fatigued or stressed).

During initial learning, children need to identify alternative means and goals in reading tasks and they need to understand how to relate various means and goals according to the particular situation (Brown, 1980). In many ways this form of teaching and learning is similar to coaching young children to acquire new athletic skills. Only by identifying the elements of different strokes and motions do beginning tennis players learn to position their feet, use top spin, and so forth. Academic skills such as reading can profit from the same type of instructions during initial acquisiton. As the skill becomes proficient and automatic, most learners do not need to consider various means and goals deliberately. The choices are made automatically. However, there are occasions when skilled learners need to reconsider the strategic components of skills. The most obvious need for strategic intervention in reading is for self-correction. When novel words or comprehension failures are encountered, readers need access to rereading, using contextual cues, and so forth as strategic aids to understanding. This is troubleshooting akin to the "debugging" skills acquired by children to correct arithmetic errors (Brown & Burton, 1978). Strategies are also needed when the task is too difficult and usual skills do not work. For example, technical vocabulary, embedded sentences, and complicated logical deductions may require taking notes, using a dictionary, or talking to someone else in order to comprehend the text. Readers undergoing stress, fatigue, or medication may also need to reconsider step-by-step strategic procedures. Finally, public consideration of cognitive strategies may be essential for teaching skills to others. Effective coaching, tutoring, and teaching require the instructor to show how individual responses can be aggregated for successful performance. The "strategy" of the means-goal connection must be transferred from teacher to pupil along with the motivation to apply it.

It is equally important to identify situations in which people do not behave strategically. Neither expert athletes nor readers consider their every move deliberately; automatic skills can be quite effective without being consciously strategic. Likewise, performance of a skilled behavior does not imply that the agent did it knowingly or purposefully. Accidental responses are not strategic. Neither are obedient responses. Actions that are undertaken to satisfy external demands, such as following directions, may be strategies for achieving social complicance but they are not necessarily employed as strategic means to learning outcomes. Thus, a given behavior can be related strategically to one goal but not another; utility of the action depends on intent.

For example, when seven-year olds who do not usually label and rehearse picture names as a memory strategy are instructed to do so, they follow directions by labelling and rehearsing names of pictures (Keeney, Canizzo, & Flavell, 1967). Although children's memory scores improve relative to their noninstructed performance, it seems erroneous to ascribe improved memory to the use of strategies since the actions were not selected, intended, or controlled by the agents. Children complied with the experimenter's "strategy" but they did not recruit their own. Imitations of skilled behavior in order to be obedient are vastly different from the self-directed use of the same behavior to enhance learning. This distinction is critical for analyses of learning because many studies have shown that compliance has little enduring effect on children's learning and generalization.

This preamble about the nature of cognitive strategies reinforces the idea that learners not actions are strategic because it is their decisions, purposes, and efforts that determine their behavior in large measure. We have also implied that learning is often not strategic and that deliberate, conscious consideration of objectives and plans during learning is not always efficient nor desirable. Understanding and using reading strategies may be most beneficial during initial acquisition of new skills and as fall-back procedures when unexpected difficulties are encountered.

Beginning Readers' Knowledge and Tactics

Long before children begin to read, they acquire considerable knowledge about language. For example, preschoolers understand the communicative function of speech (Bowerman, 1978) and can use nonlinguistic cues such as context and gestures to interpret language. These are important because,

> "Learning to read involves the acquisition of a few skills specific to reading and the use of many other abilities that are common to a variety of cognitive processes. Previously acquired linquistic and conceptual knowledge relevant for understanding oral language and interpreting visual experiences is also necessary for reading" (Juola, Schadler, Chabot, McCaughey, & Wait, 1979, p.91).

Oral language skills facilitate children's understanding of reading but the special requirements of decoding print are not obvious to the novice reader. Young children often approach reading as a mysterious activity with only vague expectations of the effort and skills involved (Reid, 1966). G.Mason (1967) suggests that "one of the first steps in learning to read seems to be the realization that one doesn't already know how" (p.122). The accuracy of this statement is illustrated by a delightful example from Marie Clay's (1973) research. She reports that one child who was excited to show off his ability closed his eyes, recited the story, and proudly proclaimed, "Look I can read with my eyes shut!"

Clearly a rudimentary requirement for beginning reading is an appreciation of task requirements. Research has shown that five and six year olds learning to read often display a surprising naivité (Clay, 1973; Mason, 1967; Mass, 1982; Reid, 1966; Venezky; 1976). They may not understand that print, not pictures, conveys meaning and that reading is directional (i.e., left to right in English and top to bottom of the page). Clay contends that print awareness begins with oral language development, and includes learning that print can be turned into speech; that there is a message recorded; that a picture is a guide to the message; that some language units are more likely to occur than others; that there is a particular message communicated by certain words in a particular order; and that memory helps understanding.

Reid's (1966) research with English children reveals the vague notions that children have about reading-related concepts. Reid interviewed five-year-olds about whether a variety of stimuli were words. None of the five-year-olds she interviewed had a clear sense of "word." Some identified whole sentences as "words," some made only random guesses, and some said that words, phrases, and sentences were all words. Downing (1970) replicated Reid's study using concrete aids, so that children answered the questions with a book in front of them. Although the children were somewhat more accurate under these conditions, there was still substantial confusion about what constitutes a word and what people look at when they read. Meltzer and Herse (1969) asked American kindergarten and first grade children to "cut off" a word with a scissors. Sometimes children cut off a word, but just as often, they cut off a portion of the word or cut off two words together.

Many other researchers have examined young children's concepts about print. Johns (1980), for example, found that below-average first-grade readers made many errors on letter-word and advanced print concepts on the Sand Test. An exception to the general pattern of poor understanding by preschoolers is provided by Hiebert (1981). She examined the responses of 60 three, four, and five-year-old children to print and drawing stimuli. She presented the stimuli in and out of meaningful context and found that even three-year-olds were discriminating when the print appeared in context. She argued that the failure to present print in context accounts for the failure of previous examiners to observe and measure young children's understanding of concepts of word, letter, and so on. However, it should be noted that Hiebert used a more liberal standard for evaluating children's responses. She did not require that they use a technical term with the same precision that Reid and Downing did. While this illuminates the level of expertise possessed by the children, the use and understanding of correct terminology is a relevant factor in children's acquisition of reading skills. Initial decoding is not usually considered a high-level reading strategy but even segmentation of phonemes and word identification require knowledge about language and reading. Knowing what unit to attend to, how to analyze letter combinations, and why phonetic decoding and print concepts are useful are all part of beginning reading. Children become more strategic as they learn to read. Their fuzzy understanding about reading as a cognitive, perceptual, social activity becomes more enlightened through practice and instruction. Word attack strategies are explained and drilled until they become automatic skills for children. However, beginning readers do not rely only on graphic information. Several studies have shown that beginning readers use sentence contexts as guides for identifying words. Indeed Stanovich (1980) has shown that context affects word recognition of young readers more than older children and adults. Studies of oral reading errors by young children lead to the same conclusion. For example, Biemiller (1970) analyzed oral reading errors of first graders throughout the school year and observed a shift in the type of errors made as children gained reading proficiency. Initially the first-graders were likely to substitute words that fit the sentence contexts. Later children were more likely to omit words or substitute words that were graphically similar. By the end of the year children's oral reading errors included substitutions that were both graphically similar and compatible with sentence meaning. Weber (1970a) also reported that substitution errors in oral reading shift during first grade from a dependency on contextual appropriateness to confusions based on graphic similarity.

Strategies for Monitoring Comprehension

The knowledge and tactics of beginning readers are the cornerstones of more sophisticated comprehension skills. A key to reading proficiency, though, is the ability to detect and repair one's own comprehension difficulties. Unfortunately, these actions are not available to many beginning or poor readers as either routine skills or fall-back strategies for self-correction. A large body of evidence reveals that poor readers do not skim, scan, reread, integrate information, plan ahead, take notes, make inferences, and so forth as often as more skilled readers (Anderson & Armbruster, 1982; Golinkoff, 1976; Ryan, 1981; Sullivan, 1978). Why not? Brown, Armbruster, and Baker (in press) suggest that less skilled readers have little knowledge of how text features, task goals, strategies, and learners' characteristics influence reading. Young readers need to acquire such knowledge and translate it into strategic reading. Deliberate use of special actions to monitor one's understanding seems to follow from a realization that a need to act with a plan, a need to check on one's comprehension, and a need to use particular trouble-shooting strategies to repair comprehension failures are necessary.

As young readers practice identifying words and reading sentences, they realize that reading requires effort. One needs to pay attention, to recall phoneme-grapheme distinctions, and to sound out difficult words. Effort must be expended for simple pronounciation goals. As children are pressed to read for meaning, learning, and examinations, they begin to realize that new goals require new plans and effort. This may sound trival but it is apparently not easy. Young children presented with memory tasks often fail to generate plans or allocate effort to studying (Kail & Hagen, 1982). Poor readers instructed to read a passage often read it only once, do not check the difficult parts, and say they are ready for a test without selective studying (Brown, Campione, & Barclay, 1979). Brown (1978) and Flavell (1978) have both stressed that a fundamental aspect of metacognition is the awareness that special plans and actions are often required for deliberate learning.

Because apprehension of meaning is a superordinate goal to nearly all reading tasks, the general plan of checking one's comprehension of meaning is a logical next phase. The plan can be instantiated by a variety of strategies such as pausing to paraphrase, looking back in the text, or answering questions about the information. What is surprising is the degree to which young children are insensitive to the comprehensibility of messages. Six and seven year old children, for example, often do not realize when directions are inadequate (Markman, 1981) or even when messages are incomprehensible (Flavell, Speer, Green, & August, 1981). Eight-year-olds, though, can detect errors in passages that are read to them much better if they are instructed to look for comprehension difficulties (Markman & Gorin, 1981).

The problem may be even greater for reading than listening. Paris and Myers (1981) tested fourth-grade good and poor readers on their abilities to detect anomalous words and phrases in stories. Children were surprisingly ineffective in detecting incomprehensible material both during oral reading and when instructed explicitly to underline mistakes in the stories. The poor readers were significantly worse than good readers who were, however, far from perfect. In these studies and others, the accuracy of children's detection of errors improves with age and reading ability (Harris, Kruithof, Terwogt, & Visser, 1981). The awareness of the need to monitor one's own comprehension during reading, a kind of mental pulse-taking, is important for strategic reading. It illustrates the need for specific repair actions and thus provides a rationale for using fix-up strategies.

A clear illustration of trouble-shooting tactics is the ability to correct one's errors during oral reading. Generally, young or less skilled readers correct a small proportion of their oral reading errors than proficient readers (Clay, 1968; Wixson, 1979). Furthermore, the rate of self-corrected errors during oral reading is highly correlated with reading achievement during early grades (Clay, 1973). But rate is not the only difference. Proficient readers are more likely to correct grammatically unacceptable errors than less skilled readers who correct acceptable and unacceptable substitutions at the same rates (Weber, 1970b).

Readers who monitor comprehension, detect errors, and intend to act with plans could recruit a variety of methods to improve understanding. Again it is surprising that many do not. When fourth graders were provided with student aids and instructed to read a passage for a later test, good readers asked more questions, took notes more often, and used a dictionary more frequently than poor readers (Paris & Myers, 1981). Part of the problem is understanding what to do but even that does not insure effective repair. For example, when poor readers substitute words as they read, they often insert inappropriate or implausible words that do not improve comprehensibility (Beebe, 1980; Isakson & Miller, 1976; Kavale & Schreiner, 1979). Repair strategies are not uniform tools; they need to be applied in flexible manners. Poor readers do not adjust their reading for different purposes easily (Forrest & Waller, Note 1; Smith, 1967) nor do novices adapt their plans to changing conditions. Owings, Peterson, Bransford, Morris, and Stein (1980) presented successful and less successful fifth graders with two kinds of passages, arbitrary and logically structured. Only the more successful students adjusted their reading and studying strategies according to the text features.

Transforming Knowledge Into Strategic Behavior

In order for children to read strategically, they must know the purpose of the task at hand and available options. Beginning and less-skilled readers are often unaware of both. Young children may not understand cognitive goals well so that end states such as story comprehension or delayed recall may seem obscure to them. Understanding various goals in different reading tasks and realizing that there are subgoals along the path to end states is very difficult also. Even when task goals are well-defined and understood, children may fail to invoke deliberate plans. They may not be aware of potential actions that will achieve the goal or they may not discriminate the utility of various actions and thus behave haphazardly. A pervasive problem is the insensitivity of young children to the need to recruit *any* special actions (Brown & DeLoache, 1978).

Declarative, Procedural, and Conditional Knowledge

Cognitive and developmental psychologists have examined the kinds of knowledge that are acquired as learners change from novices to experts. These accounts have emphasized two major types: declarative and procedural knowledge or knowing *that* and knowing *how* (Bruner, 1972; Resnick, 1983). These kinds of knowledge are crucial for becoming strategic. Declarative knowledge includes propositions about task structure and task goals. For example, I know that most stories introduce the setting and characters in the opening paragraph and I know that my comprehension goals differ when reading newspapers and textbooks. Declarative knowledge can also include beliefs about the task and one's abilities (e.g., "Reading is boring" or "I'm a slow reader"). In sum, declarative knowledge includes propositional beliefs about the existence of task characteristics and personal abilities. It includes the kind of information that can help in setting goals and adjusting actions to changing task conditions.

Procedural knowledge includes information about the execution of various actions; knowing how to skim, how to scan, how to summarize, and so forth for reading. There are many reading procedures that children learn quickly such as the directionality of reading. Other procedures such as determining pronoun references and an author's point of view remain difficult for older children. Procedures describe a large range of actions involved in any task such as reading. They are the repertoire of behavior available to the agent who selects among them to attain different goals. Therefore, the procedures are fundamental to strategic action. But there is a distinction between procedures and procedural knowledge in that the latter is second order. Current work on metacognition emphasizes the same second order relationship and reinforces the distinction between being able to perform an action and understanding the procedures of the action itself. Procedural knowledge is often acquired from direct instruction or induced from repeated experience. Thus, children who are taught to skim passages may have a greater appreciation of how to skim from practice and they may be able to describe their idiosyncratic procedures for skimming in detail. It is just this kind of understanding, procedural knowledge, that facilitates the development of strategies for reading.

However, declarative and procedural knowledge alone are not sufficient to insure that children read strategically. They only emphasize the knowledge and skills required for performance and do not address the conditions under which one might wish to select or execute actions. Because strategic behavior involves intentionality and self-control, any analysis that ignores learners' motivations is incomplete. We want to introduce a new term, conditional knowledge, to capture this dimension of learning to be strategic. Conditional knowledge includes knowing when and why to apply various actions. For example, skimming is a procedure that is only appropriate for some tasks and situations. The procedure needs to be applied selectively to particular goals in order to be a strategy. Reading only some of the words and sentences in text is not a strategy by itself; such skimming could be the result of skipping difficult words, poor visual tracking or laziness. The systematic employment of skimming to accomplish goals of speeded reading or previewing, however, would be strategic reading. Conditional knowledge describes the circumstances of application of procedures. An expert with full procedural knowledge could not adjust behavior to changing task demands without conditional knowledge.

Conditional knowledge also provides a rationale for the execution of various actions. Consider skimming again. In order for a student to sense the need to use it, to select it, and to expend effort executing the action, skimming must be perceived as valuable. It must have utility and functional value in order to be self-selected. Without conditional knowledge regarding why it is a useful procedure, it might only be executed in compliance with a teacher's request. In one sense, conditional knowledge helps the agent to orchestrate and to modulate declarative and procedural knowledge by fitting that information to particular tasks and contexts (c.f., Flavell, 1978; Rogoff, 1982). With these three types of knowledge, a competent agent can select useful actions to attain specific goals. Furthermore, the agent can behave adaptively, can adjust actions recursively to fit changing conditions, and can manage available resources (i.e., ability and effort) efficiently.

Pragmatic Aspects of Strategic Learning

Declarative, procedural, and conditional knowledge are necessary ingredients for strategic behavior. These kinds of information enable the agent to choose various behaviors to meet specified purposes. But the catalogue of knowledge available to the agent is not sufficient to insure strategic performance. Obviously an agent can choose to ignore these bits of information altogether. Sometimes their consideration takes too much time and effort.

At other times the agent may forget some information or be incapable of processing different ideas simultaneously. At still other times, one could imagine that agents' choices of actions and goals are influenced by individual styles such as risk-taking, achievement aspirations, self-concept, or fear of failure. The amount of knowledge available to the agent may help to determine if the agent is capable of a given action but is not sufficient to predict the agent's strategic use of the action. This is a basic limitation of approaches that attempt to characterize skill acquisition (and learning and development) by only contrasting the knowledge available to novices and experts.

It seems to us that strategies combine components of both skill and will (c.f., Schmidt & Paris, 1983; Vygotsky, 1978). The will is the motivated intent to accomplish a goal or behave in a particular manner. Children who try to please the teacher, to show off to classmates, or to attain errorless performance while reading are all motivated toward certain ends. These are personal intentions that could all be pursued with idenical knowledge of the reading task and are thus more "willful" than "skillful." Cognitive psychologists have often been loathe to consider motivational aspects of learning as anything more than incentives that energize a system. Social and educational psychologists, though, have shown how expectancies, aspirations, values, and beliefs can establish goals and direct the agents' behavior. A rapproachement between cognitive and motivational accounts is essential and a consideration of how children learn to be strategic readers is a particularly appropriate point of convergence.

The combination of skill and will in strategies is apparent in the pragmatics of children's learning. Extended discussions of this topic are in Schmidt and Paris' (1983) analysis of communication development and Paris and Cross' (1983) analysis of children's ordinary, functional learning. For now, we want to mention briefly three key pragmatic features of strategic behavior in children; personal significance of the means and goals, utility and efficiency of the goal-directed actions, and self-management of one's resources in a problem space.

Personal significance. Goal-setting is not an easy task for young children. They often have only a fuzzy idea of cognitive goals such as story comprehension or delayed recall of gist and little notion of special actions required to obtain these goals that increment knowledge. Teachers and parents often assume this responsibility for children as they establish goals and proscribe requisite actions. (We shall discuss instruction and social transfer of responsibility for learning in the last section of the paper.) Goals and actions proscribed by others, though, may not be meaningful to children. That is, children may not understand the end state or how the actions contribute to it.

Goals provided by others may be insignificant to the agent or learner in two basic ways. First, the goal may be foreign or novel. As such, it is unknown to the naive learner who may pursue it blindly. Second, task goals provided to learners may be appreciated but discounted. For example, the goal of completing a workbook assignment may be of little value to some students or it may conflict with other self-established goals. In either case, one would expect students to pursue these goals only under conditions of duress, compliance, or high external reward. Self-selected actions to accomplish insignificant or discounted goals seem unlikely. In a similar vein, we can imagine many examples of classroom exercises and cognitive actions that are performed mindlessly or obediently but that are not personally meaningful to students. Repeated demonstration and practice of these actions without persuasive teaching of the significance of the actions can hardly be expected to yield enduring effects on students' learning.

Utility and efficiency. Meaningfulness of task goals and actions is related to more subtle evaluations of the utility and efficiency of actions. Effort is rarely expended on activities perceived as meaningless, futile, or unrewarding. The large literature on children's use of mnemonic strategies illustrates the problem well. If we place 20 pictures of common objects on a table in front of an average six year old and ask him to remember the objects, the child will probably inspect the pictures but will not label, rehearse, or physically reorganize the pictures. When instructed to follow any of these actions, most young children comply and their memory scores improve (Brown, 1975; Kail & Hagen, 1982). On a subsequent trial without instructions to label, rehearse, or group the pictures, children revert to their prior habits and lower levels of recall. This "production deficiency" for mnemonic actions has been well documented and is one of the hallmarks of children's memory development (Brown, 1978; Flavell, 1970). Indeed it is a pervasive characteristic of young children's thinking in many domains (Paris & Lindauer, 1982). The central question is why children stop using effective actions to help them remember. One plausible answer is that the actions are not related functionally to memory goals in the children's minds. The actions are followed dutifully when demanded but they are not personally significant and therefore are not self-selected. In order to be self-selected, the actions must be perceived as valuable means toward the task goal.

Consider an example from a "training study." Paris, Newman, and McVey (1982) tested 7 and 8 year olds repeatedly for five days. Each day children were presented with a series of 30 pictures which they were instructed to study for later recall. Days 1 and 2 were given as baseline assessments. On Day 3 all children were instructed to use labeling, rehearsal, physical grouping, and self-testing as mnemonic aids. However, half of the children received additional information about the utility of the actions and the relation between the action and memory. On Days 4 and 5 all children were given additional trials to test the maintenance of the trained actions. The results of this study were clear. All children displayed significant improvements in recall on Day 3 following training. However, subjects who were given the elaborated instructions about the utility of the actions used them significantly more on Days 3, 4, and 5. In other words, immediate learning and maintained, self-controlled use of the mnemonic actions were better following informed training as opposed to simple directions to use the actions. We interpreted these results as indications of the importance of children's understanding of the utility of the actions for attaining recall goals.

Traditional examples of reading strategies also reveal the influence of personal interpretations. Kobasigawa, Ransom, and Holland (1980) investigated fourth, sixth, and eighth graders' understanding and spontaneous use of skimming. Although children in all three grades had declarative knowledge about relevant text features (e.g., topic sentences), spontaneous skimming to meet different task requirements improved with age. Could it be that older students perceive the value of skimming better than younger students? Brown and Smiley (1978) studied high school students' abilities to take notes and underline important parts of text. Students who used these adjunctive aids spontaneously applied them to important text information more effectively than students who were simply instructed to use them. The latter group complied with the direction but used the "strategies" less selectively and also remembered less of the texts.

What we are emphasizing is the importance of children's subjective judgments of their own behavior. If they do not judge the behavior as significant or useful, it is unlikely that they would pursue it in the absence of external directives or incentives. There are other judgments that can be made regarding means-goals relations in addition to significance and utility. For example, children might judge an action to be relevant, meaningful, and useful for a particular goal but they may perceive it to be cumbersome or demanding. The cost-benefit trade-off and effort required by various actions will undoubtedly influence whether children choose to follow them. Efficiency and parsimony are similar criteria against which children may judge behavioral options. While reading, many children fail to use context, analyze word parts, skim, or reread because the costs appear high in time and effort and the actions are not parsimonious for the subgoal of quick task completion. This brings us to a consideration of self-management of various resources within a task context and how agents allocate various amounts of time and effort to various goals and subgoals.

Self-management of resources. Choosing significant purposes and useful actions are central to reading strategically. But time and effort are limited and we cannot pursue all relevant means and goals simultaneously. Indeed, beginning readers have difficulty keeping track of comprehension goals and strategies if decoding requires all their attention. Skilled readers, though, do make choices about how much time and effort to devote to the task, about the relative "costs" of using various strategies and "benefits" of the goals, and about the larger social or academic context for reading the text at all. These kinds of decisions are the motivational realities confronted by teachers and students in the classroom yet they are neglected in cognitive accounts of learning to read. Young children often do not consider their actions in reading as cognitive choices and their decisions are often based on salience of outcomes, distractions, personal attributions of reading ability and conformity to teachers' requests. Cognitive style and individual's academic achievement are powerful influences on children's efforts to use and improve their learning strategies. Consider the implications of a study on "learned helplessness" in poor readers.

Butkowsky and Willows (1980) studied three groups of fifth grade boys; good, average, and poor readers. The subjects were matched on age and IQ and the students' reading abilities were judged by performance on the comprehension subtest of the Gates-MacGinitie Reading Tests and the discrepancies between IQ and reading scores. Subjects were tested on two different days with puzzles and anagrams. Half of the subjects received solvable tasks and half received puzzles and anagrams that led to repeat failure. The experimenters were interested in the effects of repeated failure on the three types of readers. Accordingly, Butkowsky and Willows (1980) collected data on boys' initial expectations for success, persistence (time) trying to solve the tasks, attributions for success and failure, and future expectations for performance. The data revealed that poor readers had significantly lower initial expectations for success on an anagram task (defined as a reading test by the experimenters). Good and average readers also persisted an average of 40% longer than poor readers on the tasks. Poor readers, though, attributed their failures to low ability rather than little effort more often than other subjects. Only 12-13% of good and average readers attributed failures to low ability while 68% of poor readers did so. Attributions for success, though, were reversed. Poor readers attributed their successes to ability much less than other boys. Thus, the poor readers took less responsibility for successful performance and blamed their failures on inability; both findings imply a low self-concept of ability. As you might guess, when boys were given an opportunity to predict their future performance, poor readers who experienced failure on the unsolvable tasks lowered their expectations more than any other group of readers.

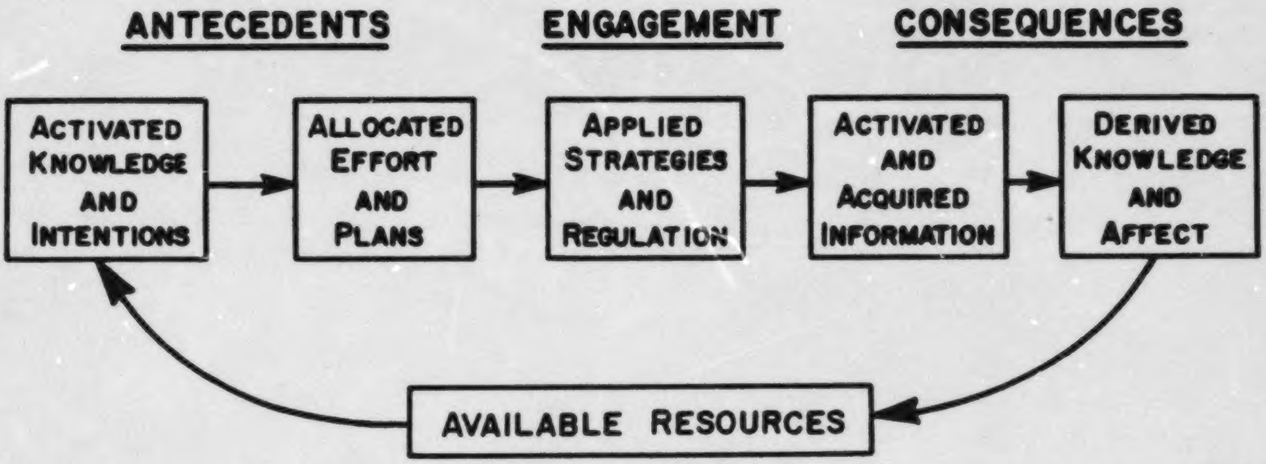
This study, like others that reveal strong relationships between self-concept measures and academic achievement (Shavelson & Bolus, 1982; Vaidya & Chansky, 1980), illustrates how children make decisions to invest their time and effort in tasks. Measures of choice, persistence, and utility reveal how children direct their own learning. Achievement history, attributions, and self-concept influence those decisions. One way to illustrate the decisions involved in using strategies to solve tasks is shown in Figure 1 from Paris and Cross (1983).

Insert Figure 1 about here

The first step is to identify appropriate goals. A child reading a story should consider if he is reading for enjoyment, to identify the main plot, to fill out workbook questions, or for some other purpose. The second step in Figure 1 is to allocate effort to some actions and not others. Plans need to be established about the best course of action and that depends upon personal significance of goals and the utility and efficiency of the various means. Those chosen plans must then be executed and monitored during task engagement (e.g., on-line processing while reading). Following the task the learner may consider the consequences of performance, receive feedback, or attribute success or failure to various factors. The last step, derived knowledge and affect, represents the subjective interpretation of the experience. These reactions can include self-

Figure Caption

Figure 1. A self-managed learning cycle. This diagram illustrates how motivation and knowledge are combined during strategic learning.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ACTIVATED AND ACQUIRED INFORMATION
DERIVED KNOWLEDGE AND AFFECT
AVAILABLE RESOURCES

serving rationalizations that permit the person to cope with the outcomes (Covington, 1983) by attributing failure to external and unstable causes or simply discounting the entire task. Expectancies and strategies for future task engagements will be influenced greatly by the individual's understanding of his or her own performance.

In summary, we have tried to illustrate many factors that influence how children become strategic learners. Part of becoming a proficient reader includes the acquisition of knowledge relevant to the task. Declarative, procedural, and conditional knowledge provide a convenient taxonomy of information necessary for strategic performance. But motivation influences this knowledge in dynamic and idiosyncratic ways. Judgments are made by learners about; (a) the personal significance of goals within the task, (b) the perceived utility, value, and efficiency of alternative actions, and (c) the self-management of effort, time, and knowledge so that major objectives may be reached. The decisions at each step of problem-solving are critical components of employing cognitive strategies. We need to understand those combinations of skill and will if we are to provide better instruction to children and transfer the responsibility for controlling future learning to children directly.

The Ecology of Reading Instruction

Learning to read is a sign of literacy and a gateway to education. It is a fundamental goal of schooling and a major part of curricula in early school years. In many ways children learn to read in the same fashions that they master nonacademic tasks of childhood. Consider ordinary tasks such as learning to ride a bicycle, play a musical instrument, or cook a meal. They all share similar features during skill acquisition. Initially children's performance is often halting and error-prone. Great expectations are often frustrated by failure as children learn that the skill will not be acquired easily or quickly. Beginners often have little idea of experts' performance or appropriate intermediate levels for their own behavior. They do not realize the course or rate of progress to be expected. Throughout learning, whether the task is reading or fishing, children receive guidance from adults who provide models, advice, and reinforcement. Children also compare their performance to peers, often promoted by adult-sponsored competition and grouping of children according to skill levels. A final similarity is that ordinary learning usually involves repeated practice that becomes self-guided and self-improving (Paris & Cross, 1983).

Comparing how children learn to read and how they master other skills illustrates that ordinary learning is a dynamic social-motivational enterprise. It takes time, practice, and other people. The deliberate, strategic use of actions to guide reading comprehension represents the fusion of cognitive skills and motivational will within the social contexts of learning to read.

Traditional accounts of learning to read have often emphasized the skills of the reader and the features of text without much regard for the supports and obstacles to learning that are provided in the social context (Cazden, 1981). In our view, parents, teachers, and peers help to guide children to become strategic readers by providing both knowledge and motivation. They model components of strategic reading and provide corrective feedback. They may impart declarative, procedural, and conditional knowledge that students use to develop personal evaluations of reading skills. These evaluations can influence how students recruit, apply, and manage their own strategic reading behavior. Beginning readers may rely heavily on adults' advice to direct their effort and actions but gradually, responsibility for initiating and sustaining strategic reading is shifted to students. Vygotsky (1978) referred to this transfer of control as a shift from an "inter- to intra-psychological plane of functioning." Analyses of reading groups and classroom instruction reveal how social context can influence this transfer of responsibility for self-managed learning (Pearson & Tierney, 1983).

For example, there is evidence that teachers treat good and poor readers differently in the classroom (Weinstein, 1976). Allington (1980) observed teachers' behavior as they listened to first and second graders read aloud. He found that teachers were more likely to interrupt poor readers than good readers following oral reading errors. Further, teachers corrected pronounciation errors more often for poor readers and corrected syntactic-semantic errors more often for good readers. Apparently, many teachers are quite able to provide different kinds of assistance to readers of different abilities.

Social interactions between teachers and students allow teachers to fit their instruction to each child. This give-and-take of instruction permits teachers to find the "zone of proximal development" for each child. This is a term used by Vygotsky to mark the leading edge of an individual's learning, a region of performance that a child can master with help but could not accomplish alone. Au and Ignacio (Note 2) describe the social dynamics of reading groups in KEEP (Kamehameha Early Education Project) as a good example of this concept. Teachers in KEEP use the Hawaiian tradition of talk stories to promote children's comprehension. The method involves asking children questions about their experiences and background knowledge of the topic before reading. Teachers then ask children questions about the text after reading that focus on the text information and how it is related to their own experiences. The group discussions are gradually reduced as children learn to internalize the questioning and relating of information prompted by the teacher. Besides teaching children to reason about textual information, the talk stories fit the cultural traditions of native Hawaiian children and are quite motivating. As Mason and Au (in press) point out, "...how well a lesson is socially structured can influence children's willingness or ability to attend to a cognitive task."

Another way in which social context affects children's reading is through differential emphases on various reading tactics. Barr (1974-75) reported that strategies employed by children in the service of reading new words are correlated significantly with the type of classroom instruction received. Wixson, Bosky, Yochum, and Alvermann (Note 3) asked fourth and fifth graders in two different classrooms many questions about their reading including, "If your teacher asked you to remember what is in a book chapter, what is the best way for you to study it?" In class A, the teacher never assigned independent reading or gave chapter tests. The teacher in class B did both regularly. Students in class A responded to the question primarily by saying that they would reread the text while students in class B proposed a variety of strategies such as taking notes or studying with a friend. In a similar vein, Mosenthal (in press) has shown that fourth graders interpret the motives of story characters according to the students' interactional style and compliance with the classroom teacher. Thus, learning strategies may be acquired and applied differently depending on the student-teacher relationship and teaching practices. The research suggests "that reading is not simply a matter of processing new and old information; reading also involves processing social information. To be a good reader, one must learn how, when, and where to integrate new and old information as the pervading ideology demands" (Mosenthal, in press, p. 18).

Social context and instruction geared to children's performance are hardly novel educational claims. What makes them compelling now is that recent research may illuminate ways to improve instruction that fits the zone of proximal development. Our preceding analysis implies that teachers and parents should (a) assess children's declarative and procedural knowledge about reading and (b) provide more information directly so that children can elaborate and refine their conceptual understanding. In plain language, they should teach children to think about reading strategically.

But demonstrating and telling alone are not teaching. Beginning readers need to be persuaded that the instructed techniques are useful and necessary. Children need to learn the conditions under which strategies are applied and not applied. Then they will know when and why to use them. Conditional knowledge is the glue that holds skill and will together in our analysis of reading strategies. Usually children are told when to perform the "strategies." Seldom are they told why. This seems paradoxical given that students are pressed to become more independent learners in school who must make choices among many demands for their effort and attention. This paradox and the promising research on metacognition provided impetus for our research on an adjunctive experimental reading curriculum.

The argument that strategies are important for reading comprehension and that declarative, procedural, and conditional knowledge are necessary for the development of strategic readers is being evaluated in a longitudinal, experimental study. We sought to devise classroom methods to teach children these dimensions of reading and to test the consequences of increased awareness on children's reading behavior. The project, called

Informed Strategies for Learning (ISL), was conducted in four third and four fifth grade classes (Paris, Lipson, Cross, Jacobs, DeBritto, & Oka, Note 4). Two classes at each grade level received four months of instruction about reading strategies that included half-hour lessons twice each week as group activities. The lessons revolved around concrete metaphors (such as "Be a reading detective," "Plan your reading trip," and "Round up your ideas") and class discussions of reading material, e.g., chart stories and worksheets. During each lesson children discussed the purpose and value of the actions and the occasions when they would be most helpful. The emphasis was on increasing awareness of the significance and utility of strategies through practice and discussion. A comparison of pre- and post-test scores of control and experimental classes revealed that informed instruction was successful. Children in the experimental classes scored significantly higher than other children on measures of reported understanding about reading (i.e., a "metacognitive" interview), error detection, strategy ratings, cloze tasks, and reading comprehension. We are currently testing the efficacy of the instructional materials and methods of ISL for teachers' adoption into their own instructional programs in fifty classrooms. At this point we are encouraged that reading strategies can be taught directly and that teachers and students alike appreciate the value of learning about declarative, procedural, and conditional knowledge. Enhanced understanding and motivation to read can go hand in hand.

Summary

In this paper we have tried to combine ideas on reading skills, instruction, metacognition, and strategies. We embedded our analysis in a learning framework that emphasizes cognitive development and social contexts of learners. We believe that analyses of only cognitive components of reading skills neglect the rational acquisition of deliberate strategies and the motivational dynamics underlying their self-controlled use. By fusing skill and will into our theoretical analyses and classroom curricula we might be able to help children become skilled readers, independent thinkers, and enthusiastic learners.

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Chapter 2

The Relationship Between Children's Reading Awareness and Their Comprehension Skills

Learning to read is a sign of literacy and a gateway to education. It involves mastery of a rich variety of skills and is not accomplished quickly or easily. As a consequence, reading instruction is a large part of the educational curriculum during early school years and is a basic concern of teachers and educational researchers alike. In this study we address the broad issues of how cognitive awareness and reading comprehension are related and how instruction can foster comprehension skills. Our specific focus is on the role of children's knowledge about reading as they learn basic strategies for comprehending text.

Awareness about reading has become an increasingly important dimension in recent years because it distinguishes beginning and advanced readers. Skilled readers often engage in deliberate activities that require planful thinking, flexible strategies, and periodic self-monitoring. They think about the topic, look forward and backwards in the passage, and check their own understanding as they read. Beginning readers or poor readers do not recruit and use these skills (Baker & Brown, in press; Ryan, 1981). Indeed, novice readers often seem oblivious to these strategies and the need to use them (Johns, 1980). For example, Myers and Paris (1978) interviewed children about their understanding about reading and found that eight year-olds were much less cognizant of various reading strategies and task characteristics than twelve year-olds.

Greater appreciation of the cognitive skills involved in reading accompanies the acquisition of reading strategies and fluent reading (Brown, Armbruster, & Baker, in press). Over the years, this kind of awareness has been referred to by terms such as "reflective thinking," "problem-solving skills," "consciousness raising," and, most recently, "metacognition." Whatever label we choose, it is clear that the concept is important for understanding how children learn to read. Unfortunately, these labels have been used inconsistently to refer to many kinds of knowledge and many cognitive skills. Therefore, we shall use the term "reading awareness" to refer to the knowledge that children report about that domain.

Because we are most concerned with understanding how children become strategic readers, we have focused on children's awareness of three broad categories of reasoning skills; evaluation, planning, and regulation (Paris & Lindauer, 1982). In the context of reading, evaluation refers to an appraisal of the task and of one's cognitive abilities. Planning involves the selection of particular actions to reach goals that have been set or chosen. Regulation concerns monitoring and redirecting one's efforts during the course of reading to reach the desired goals.

Children's understanding of reasoning skills is informed by several kinds of knowledge. The first kind is commonly referred to as declarative knowledge and includes propositions about a domain, such as knowing that titles provide clues about the topic of a passage and that periods often end sentences. Bruner (1972) called it "knowing that" in order to distinguish this static kind of knowledge from the dynamic knowledge of action or "knowing how." This second kind of knowledge is often referred to as procedural knowledge because it conveys information about actions such as reading left to right in English or reading only occasional, informative words in order to skim. There is a kind of knowledge, though, that is often ignored in information processing accounts of skill acquisition. We have labeled it "conditional knowledge" (Paris, Lipson, & Wixson, 1983) because it refers to the particular circumstances under which one applies relevant declarative and procedural knowledge. It is knowing when and why to apply strategies that makes a reader planful and flexible rather than mechanical. These three types of knowledge have been emphasized in descriptions of children's metacognition in a variety of domains (Brown, 1978; Flavell, 1978).

Despite repeated assertions about the importance of metacognition for cognitive development and the acquisition of reading, there are few studies that have exhibited the relationship between increased awareness and increased reading skills. This issue is the primary focus of the present study, namely, is children's knowledge about reading related to their actual reading performance? This issue leads to a related question: Can children's awareness be enhanced by direct instruction? If awareness about reading does play a fundamental role in the acquisition of reading, then the question of instruction assumes great importance.

There have been a few attempts to explore the relationship between children's awareness and reading skills. Canney and Winograd (1979) studied children's beliefs about reading by using an interview and an experimental manipulation. Children in grades 2, 4, 6, and 8 were presented with passages that were either intact or disrupted at four levels of severity. When children were asked if each passage could be read and why, it was found that younger and poorer readers attended to the decoding aspects of reading while more proficient readers knew that making sense of the text was the goal of reading. Kobasigawa, Ransom, and Holland (1980) reached similar conclusions when they asked children in grades 4, 6, and 8 questions about skimming. Children at all grade levels could describe skimming but only children in grade 8 could use skimming as a strategy. Finally, Forrest and Waller (1979) found that older, better readers were able to verbalize more about their strategic knowledge and were better able to utilize that information.

Most studies of children's knowledge about reading have employed interviews to measure awareness or metacognition. Reid (1966) conducted one of the first studies that asked children what they thought about reading. She found that four and five year-olds did not know the goals of reading or the function of letters, words, or punctuation. Johns (1980) observed a similar lack of knowledge among beginning readers. Myers and Paris (1978) used Flavell and Wellman's (1977) categories of person, task, and strategy variables to construct an interview to examine the knowledge about reading reported by eight and twelve year-olds. Older children were more aware than younger children of the effects of many variables on reading and the utility of strategies for comprehension. Forrest and Waller (1979) also noted marked differences in awareness about reading between third and sixth graders.

While these interview studies have provided valuable information concerning children's knowledge about reading, they have not correlated measures of awareness with traditional comprehension measures and most studies have reported the frequencies of responses only without judging the quality of children's answers. In the present study we used a scripted interview that permitted quantitative as well as qualitative analyses of children's reported knowledge about evaluation, planning, and regulation skills for reading.

The second issue addressed by the present research is instruction. Can children's awareness about reading be increased through classroom instruction? Retarded children can be taught to use memory strategies with cognitive instructional techniques (e.g., Brown, Campione, & Barclay, 1979) and several researchers have advocated similar techniques for teaching strategies to young readers (Baker & Brown, in press; Ryan, 1981). It seems to us that many cognitive intervention studies have been ineffective because the training was too brief or too removed from the classroom. In this study the instruction was provided periodically for four months in children's regular classrooms. We also think that many training studies have emphasized declarative and procedural knowledge exclusively in the interventions so that children were told what to do and how to do it, rather than under what circumstances particular strategies might work. They were not told about the usefulness or importance of the strategies either, thus, when left on their own, children did not use the skills that they were taught. Conditional knowledge is crucial for children's self-controlled use of memory strategies (Paris, Newman, & McVey, 1982) and it seems equally important for their reading skills. This study emphasized the use of conditional knowledge about when and why to use reading comprehension strategies. Children were taught a wide variety of reading skills involving evaluation, planning, and regulation during weekly lessons.

To summarize, this study has two aims: (1) to examine the relationship between children's reported awareness about reading and their reading comprehension skills, and (2) to train children in the classroom to understand and to use reading strategies more effectively. The major hypotheses of the research are (a) that awareness and comprehension are positively related and (b) that direct instruction on how to evaluate, plan, and regulate one's reading can enhance reading awareness. Our ultimate goal is to understand how children's reading awareness influences their acquisition of proficient reading comprehension skills.

Method

Subjects

The subjects were 91 third graders (mean age = 8 years, 5 months; SD = 4.7 months) and 92 fifth graders (mean age = 10 years, 5 months; SD = 5.2 months). All children were members of eight intact classrooms whose teachers volunteered to participate in this study. Classes were located in four different schools (one third and one fifth grade class in each school) in the same district. Separate schools were chosen for experimental and control classes in order to prevent teachers and students from sharing the information in the training program. Schools were selected to represent the socioeconomic variation that existed within the district. They were also matched approximately on schoolwide scores from the California

Achievement Test given the previous year. Each classroom had nearly equal numbers of boys and girls and classes had similar ethnic representation, approximately 65% Caucasian and 35% Black, Asian, and Native American. Thirteen subjects were dropped from the sample because of longterm illness, moving from the school, or voluntary withdrawal from the study.

Measures

This study was part of a larger longitudinal investigation of children's reading skills (Paris, Lipson, Cross, Jacobs, DeBritto, & Oka, 1982). Because this paper is restricted to the issue of the relationship between awareness and reading comprehension, only four relevant measures will be discussed. A structured interview task provided the data about children's reading awareness. Three different reading tasks were used to gauge comprehension in order to provide diverse samples of children's reading abilities.

Metacognitive interview.

The interview consisted of 33 Likert-scaled items and 19 open-ended questions arranged in a conversational script. Children were interviewed individually with this instrument in the fall and spring of the school year. Testing required about 30 minutes and was conducted in a quiet room in the school. This paper reports only children's responses to the open-ended questions.

The questions were designed to test children's awareness about reading in three general areas; evaluation of the reading task and one's own abilities, planning to reach a specified reading goal, and regulating reading through the use of monitoring strategies. Some of the questions are similar to those employed by Myers and Paris (1978). The open-ended questions were scattered throughout the interview so that children did not develop a response bias to scaled items nor tire from answering questions. This also helped to maintain the conversational flow of the interview. Fifteen of the 19 open-ended questions were consolidated into an interview score to yield balanced subscales of five items for each category; evaluation, planning, and regulation. Principal component and correlational analyses were used to select these 15 items. The questions comprising the reading awareness scores are listed in Table 1. Only the first responses to each question were analyzed because fewer than 20% of the children gave more than one answer to the open-ended questions. All interviews were coded by two people. Interrater reliability was calculated for each item on 25% of the protocols. The percent agreement for items ranged from 78-99% with the overall agreement at 90%. Children's responses to each question were categorized and then assigned 0, 1, or 2 points based on conceptual awareness about reading. Zero meant that no answer or an inappropriate response was given. One point was assigned for appropriate responses that reflected (a) the child's use of external

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Insert Table 1 about here

Table 1

Reading Awareness Interview

Evaluation

1. What's the hardest part about reading for you?
2. What would help you become a better reader?
3. Is there anything special about the first sentence or two in a story? What do they tell you?
4. How about the last sentence; what does it tell you?
5. How can you tell which sentences are the most important ones in a story?

Planning

1. If you could only read some sentences in the story because you were in a hurry, which ones would you read?
2. What do you try to tell someone about a story--all the words, just the ending, what the story was about, or something else?
3. The other day I asked a boy to read a story and then to tell me what he read. Before he started reading, though, he asked me if I wanted him to remember the story word-for-word or just the general meaning. Why do you think he asked me that?
4. Before you start to read, do you do anything special? What kinds of plans help you read better?

Table 1 (continued)

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5. If you had to read very fast and could only read some words, which ones would you try to read?

Regulation

1. Do you ever go back and read things over? Why?
2. What do you do if you come to a word you don't understand?
3. What do you do if you don't understand a whole sentence?
4. What parts of a story do you skip as you read?
5. What things do you read faster than others?

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factors such as other people, (b) complexity of the materials, and (c) general activities such as practice and paying attention as aids for reading. A value of two was given to answers that were evaluative, planful, or strategic. These responses often mentioned cognitive or affective aspects of comprehension, reading goals, and specific strategies used by children. See Paris, Lipson, Cross, Jacobs, DeBritto, and Oka (1982) for a more complete description of the scoring procedures for this task and others.

Standardized comprehension test. The Gates-MacGinitie Reading Test was used as a primary measure of reading ability because it is a group-administered, normatively referenced test of both vocabulary and comprehension that provides raw, percentile, and extended scale scores. The test was standardized on a stratified sample of 65,000 students, based on geographic regions defined by the 1970 U.S. Census. Reliability coefficients were computed from the standardization sample for each level of the test using Cronbach's alpha: C-1 = .92, D-1 = .90 (MacGinitie, 1978). The test is commonly used in research and clinical reading assessments. Equivalent forms of the test were used for each grade (Level C for third grade and Level D for fifth grade). Form 1 was used for the pretest and Form 2 was used for the posttest at each grade level. Only the comprehension extended scale scores will be reported here. The comprehension subtest measures children's abilities to read prose with understanding. Children are required to read passages and to answer both implicit and explicit questions about them.

Cloze Task. The cloze task is a passage from which selected words have been deleted. Subjects are expected to fill in the blank spaces with the original words. Four different versions of the cloze task were prepared, one passage for each grade level at both pre and posttest. The passages were all taken from the Classroom Reading Inventory (Silvaroli, 1976); second and fourth grade level passages were used for the third and fifth grade versions respectively. With the exception of the first and last sentence of the passages, every fifth word was deleted from the modified passages so that each passage contained 13 blanks. Each passage was presented on a page with a picture and title as cues. One passage is shown in Table 2.

Insert Table 2 about here

Children's responses were assigned 0 points if the space was left blank or filled in with an inappropriate word. One point was awarded if the word supplied was incorrect but either syntactically or semantically appropriate to the slot. Two points were awarded if the original word or synonym was supplied. This scoring system is slightly more lenient than simply counting all other words except the deleted one as incorrect but the two scoring procedures correlated highly ($r = .90$).

Error Detection. Children's reading comprehension was also measured by their abilities to detect incomprehensible information in text. At both pre and posttests children read two passages and

Table 2

Example of a Cloze Passage

SMART BIRDS

Everyone knows that birds like to eat seeds and grain. Birds also like to _________ little stones called gravel. _________ have to eat the _________ because they don't have _________ to grind their food. _________ gravel stays in the _________ gizzard which is something like a stomach. When the _________ eats seed, the gravel _________ the seed grind together. _________ of the seed is _________ up.

Tame birds must _________ given gravel. Wild birds _________ their own gravel on _________ sides. Now you can see how smart birds are.

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underlined those words or sentences that did not make sense. Each passage contained two nonsense words (e.g., klids) and two clauses with scrambled word orders. The eight passages were derived from grade appropriate stories in the Diagnostic Reading Scales (Spache, 1972). The third grade passages were all nine or ten sentences long; the fifth grade passages ranged from 11 to 16 sentences. The scores used in the present analyses are the proportions of errors detected correctly.

Procedure

Testing. The four tasks described in this paper were all administered in conjunction with other tests in the larger reading project. The pretests were administered in October. Children were taken from the classroom for two individually administered sessions each lasting about 45 minutes. They also participated in two one-hour group testing sessions. The posttest was administered in April and May of the school year, one month after the last direct intervention in the classroom.

The interviews were given individually by experienced male and female researchers with the provision that each person tested different classrooms at pre and posttests. Rapport was established with each child before the interviews. All children were informed of the nature of the interview and were told that there were no right or wrong answers; "we just want to know what you think about reading." Questions were read from the script in the same order for all children (following three warm-up questions). Responses were recorded verbatim. Questions were repeated if children did not clearly understand them. All questions received one prompt for more information. If a child failed to answer a question, even after the prompt, the experimenter went on to the next item. Most children were eager to talk about reading and their own thoughts.

The Gates-MacGinitie Reading Test, the cloze passages, and the error detection tasks were all administered to children in their classes as intact groups. The Gates-MacGinitie Reading Test is timed but the other tasks were not constrained. Experimenters read specific instructions for each task and gave additional guidance if children needed it in order to fill out the test forms.

Intervention. The instructional phase of the program was designed to increase children's awareness about reading by emphasizing declarative, procedural, and conditional knowledge. In simpler terms, the lessons taught children about reading comprehension strategies and how, when, and why to use them. Increasing children's knowledge about these aspects of reading was expected to improve the way they learned to evaluate, plan, and regulate their own reading. The usefulness of strategies such as skimming, inferring, and summarizing was taught in a series of short (20-30 minutes) lessons presented twice each week to the entire class for fourteen weeks. The lessons were presented by a female experimenter who is an authority on reading and former teacher.[2] Bulletin board displays were used each week to portray the strategy being instructed via metaphors such as "Be a Reading Detective" and "Tracking Down the Main Idea." The central aspects of the instruction were the direct information provided about reading strategies, the metaphors as vehicles to describe and communicate the strategies, and the public dialogue between children and the teacher-experimenter. Each of these instructional devices was designed to increase children's awareness about reading. More detailed information on the instructional program, called Informed Strategies for Learning (ISL), can be found in Paris, Lipson, Cross, Jacobs, DeBritto, and Oka (1983) or Paris, Lipson, and Wixson (1983).

Results

In order to facilitate presentation the scores for each comprehension measure and the awareness interview were standardized for all analyses described here. All scores were standardized across grades so that between-grade comparisons could be made. Finally, scores were increased by ten so that all scores are positive.

Pretest Relationships Among Tasks

A major goal of this study was to test the relationship between awareness and comprehension skills. We began by correlating the scores from the interview with those from the Gates-MacGinitie comprehension test, the cloze task, and the error detection task. Correlations are presented for third and fifth grades separately in Table 3. As we hypothesized, children's awareness about reading is positively related to their performance on most reading tasks. Although the correlations are modest, the relationship between awareness and task performance is

Insert Table 3 about here

Table 3

Pretest Correlations Among Awareness and Comprehension Tasks

Task	Grade 3	Grade 5
Gates-MacGinitie	.28**	.40***
Cloze	.24*	.33**
Error Detection	.17	.38***

*p <.05

**p <.01

***p <.001

Ncte: Cell entries are Pearson product-moment correlations.

considerably higher in the fifth grade than in the third. By fifth grade, children's degree of awareness appears to be more closely related to performance on comprehension tasks.

In order to examine how children with different levels of awareness performed on comprehension tasks, children were divided on the basis of their interview scores into high, middle, or low awareness groups. The range of interview scores (7.73 to 12.53) was divided into thirds. Because the divisions were based on the distribution of scores, the number in each group varied slightly. Table 4 shows the distribution of children across the three levels of awareness by grade and treatment condition. It is clear that the experimental and control groups have similar numbers of children at each level ($\chi^2 = .11$, df = 2, $p = .95$). However, it is not surprising to find significantly ($p < .01$) fewer third graders at the high awareness level.

Insert Table 4 about here

Pretest Relationship Between Awareness and Comprehension

Before assessing the pretest relationship between awareness and performance on the reading tasks, the experimental and control groups were compared to insure that the two groups were similar before the intervention. ANOVAs were performed on all pretest comprehension scores and no significant differences were found between children in experimental and control classes. There were also no significant differences between the two groups in reading awareness as measured by the Interview.

Table 4

Distribution of Subjects in Post Hoc Groups According to Levels of Reading Awareness

	Awareness Level					
	Low		Middle		High	
Grade	3	5	3	5	3	5
Experimental	15	12	15	15	10	14
Control	17	9	21	11	6	20

The data from experimental and control groups were combined after determining that there were no initial differences between groups. We hypothesized that grade and level of awareness would differentially determine performance on comprehension tasks. In order to test that hypothesis a two-factor MANOVA was performed, using grade and awareness level as independent variables and the scores for the three comprehension tasks as dependent variables. Univariate analyses were also performed for each of the separate comprehension scores following the multivariate test. This analysis initially treated the three scores as a single collection (e.g., a general measure of comprehension). There are two advantages of this multivariate procedure over traditional univariate tests: (1) it combines related variables in an optimal way to describe a "best" score of comprehension and (2) it reduces the probability of Type 1 error by using a single statistical test for a set of variables. The results of the MANOVA indicated that there were multivariate effects due to level of awareness, $F(6, 308) = 5.30$, $p < .001$, and grade, $F(3, 154) = 13.82$, $p < .001$. No interaction between level of awareness and grade was present for the set of comprehension variables. Thus reading awareness is related significantly to general reading comprehension for children in both grades.

The univariate tests revealed similar patterns and specific contrasts (F-tests) clearly showed comprehension differences between children at each level of awareness. Figure 1 illustrates

Insert Figure 1 about here

these patterns.

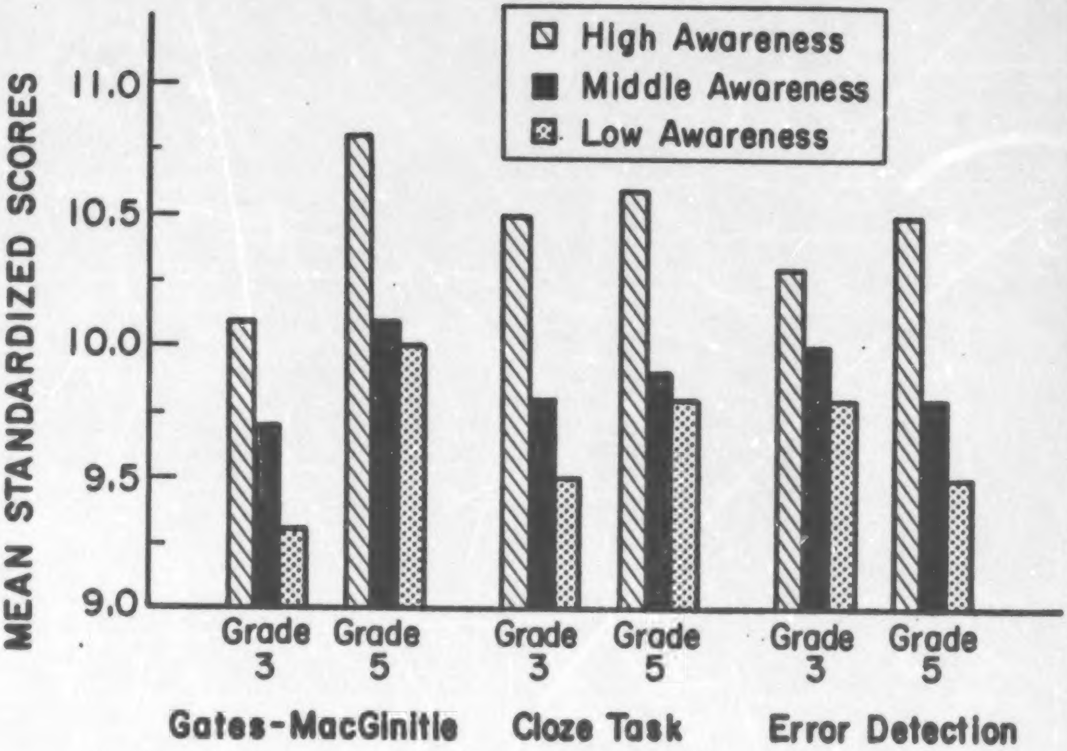
In the third grade, the level of awareness was related consistently to performance on comprehension tasks. A dramatic difference between the low awareness groups and the other two groups is evident, particularly for the Gates-MacGinitie and cloze tasks. On each of these tasks, the group with least awareness performed significantly worse than the other two groups (p <.01). The high awareness group performed significantly better than the low group on the Gates-MacGinitie Comprehension test (p <.01) and better than both low and middle groups on the cloze task (p <.05). The difference between the three groups was also striking among fifth graders. Children with high awareness performed significantly better than other children on all comprehension tasks (p <.05).

Posttest Relationship Between Awareness and Comprehension

Children were divided into high, middle, and low awareness groups on the basis of their posttest scores as they had been for the pretest in order to test the relationship between awareness and comprehension and to replicate the pretest findings. A two-factor MANOVA with grade and level of awareness as independent variables revealed patterns similar to the pretest data. A significant main effect of awareness, $F(6, 300) = 7.72$, p <.001, was found for the set of comprehension variables and a large main effect for grade

Figure Captions

Figure 1. Comprehension scores for each grade and task according to level of reading awareness.



was present, $F(3, 150) = 8.80$, $p < .001$. No interaction was found. Univariate tests revealed the same pattern of results for each comprehension task with children in high awareness groups scoring significantly better than less aware children.

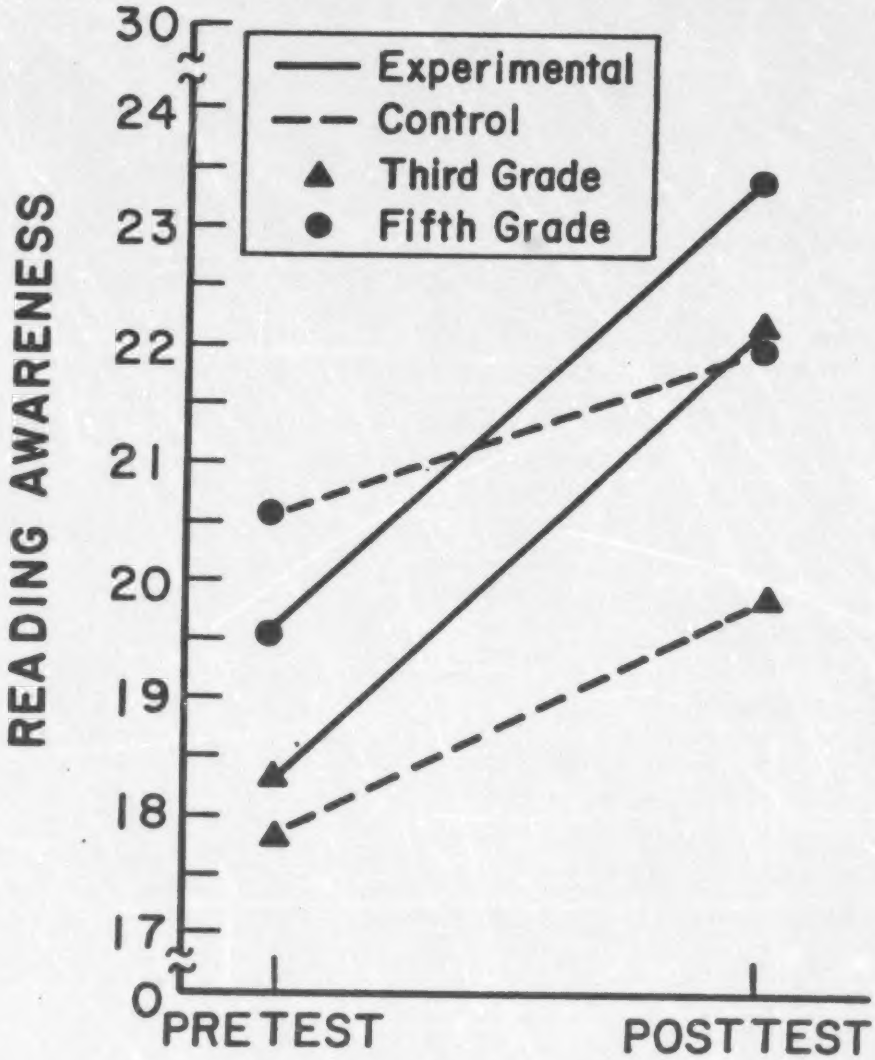
Treatment Effects

By the time of the posttest children in the experimental classrooms had received fourteen weeks of instruction concerning specific reading strategies. We hypothesized that reading awareness and comprehension would increase more for experimental than for control groups. As Figure 2 illustrates, all children increased their reading awareness during the year. However, third and fifth graders in the experimental groups made more substantial gains than children in the control classes. The impact of the instructional intervention on children's reading awareness was assessed by analysis of covariance. The posttest interview scores were compared by using treatment and grade as independent variables. The pretest scores served as covariates in order to control for any initial differences. Gains in reading awareness made by the experimental groups, after controlling for the pretest scores, were significantly larger than those made by the control groups, $F(1, 150) = 16.00$, $p < .0001$. No main effect for grade was found because of the initial relationship between pretest awareness and grade ($r = .26$).

Insert Figure 2 about here

Figure Captions

Figure 2. Longitudinal changes in reading awareness according to grade and treatment.



No interaction was found.

Because the instructional intervention enhanced students' reading awareness, we would also expect to find changes in the distribution of experimental and control children at each level of awareness. At the pretest approximately equal numbers of children from experimental and control groups were represented at the low, middle, and high awareness levels. On the posttest, though, the distribution of subjects was significantly different ($\chi^2 = 11.78$, df = 2, $p < .01$). Experimental groups at both grade levels included more highly aware children after the treatment; control groups included more students in the low awareness group.

Relationship Between Beginning Awareness and Treatment

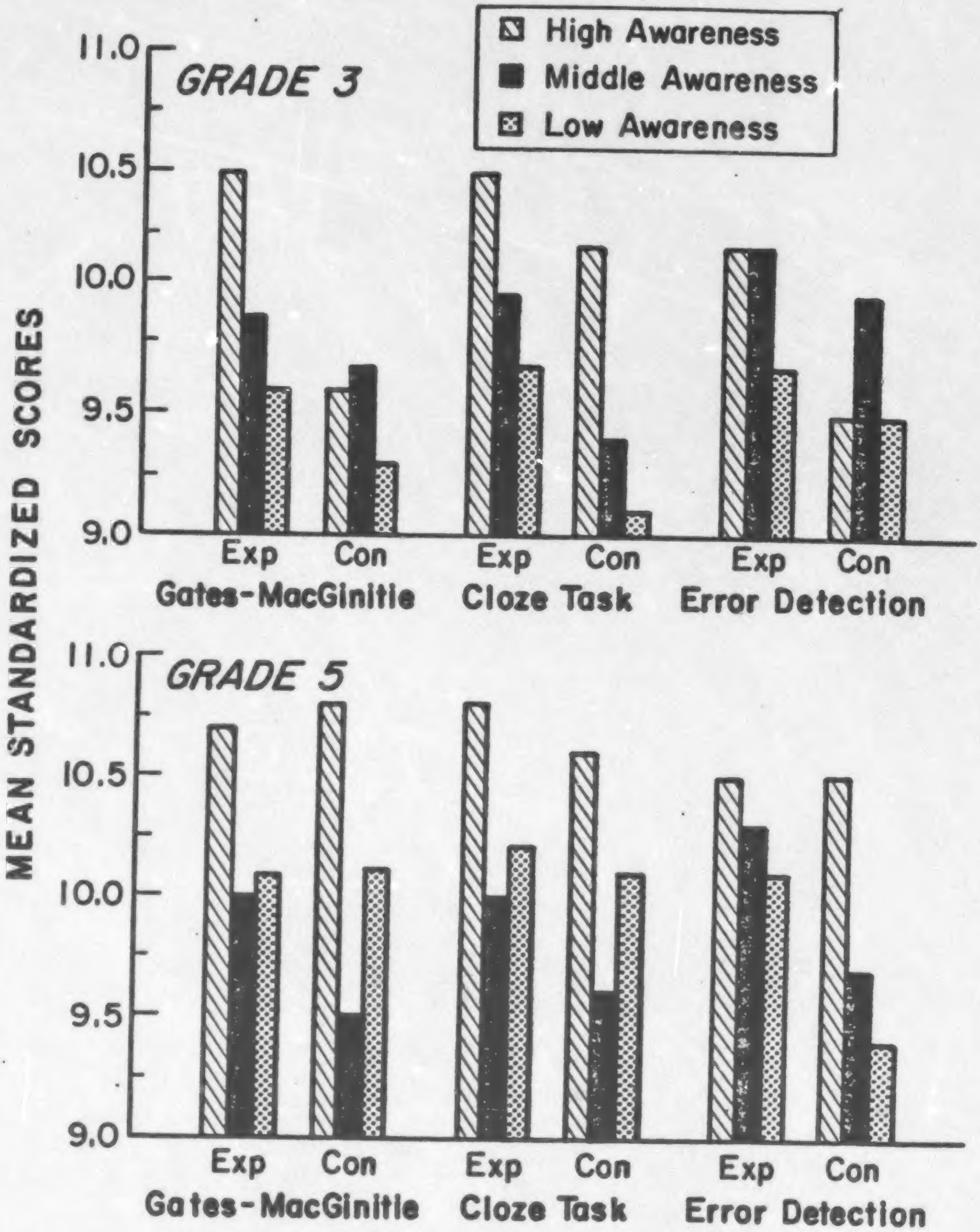
Our results clearly show that the ISL program had a positive effect on children's reading awareness. Because the program goals included teaching when and how to apply specific reading strategies, we also expected to see an impact on children's reading comprehension after receiving the instruction. To test for the effects of the intervention on reading comprehension, a two-factor (grade x treatment) MANCOVA was performed, using pretest scores as covariates. (There were no significant differences between experimental and control groups on pretest comprehension tasks.) A main effect of treatment was found, $F(3. 153) = 6.79$, $p < .001$, which means that children in the experimental groups performed significantly better on the set of comprehension tasks than children in control groups. After controlling for pretest performance, a main effect for grade was not found. No interaction was present. Similar ANCOVAs for each comprehension task revealed the same pattern. However, comprehension differences between experimental and control groups were significant only for the cloze task, $\underline{F}(1, 155) = 16.7$, $\underline{p} < .001$, and the error detection task, $\underline{F}(1, 155) = 5.59$, $\underline{p} < .05$.

Children in experimental groups at both grade levels increased their awareness and comprehension scores significantly after receiving the metacognitive instruction. But did all children benefit equally? Perhaps only some children who were high or low in reading awareness initially benefitted from the instruction. A three-factor MANOVA was performed to test the relationship between initial reading awareness and the influence of the treatment. Original level of awareness, grade, and treatment were used as independent variables. The three posttest comprehension task scores served as dependent variables. Figure 3 illustrates the posttest comprehension performance of experimental and control groups according to different levels of initial reading awareness.

Insert Figure 3 about here

The MANOVA revealed significant main effects of treatment, $\underline{F}(3, 147) = 3.51$, $\underline{p} < .05$; grade, $\underline{F}(3, 147) = 8.55$, $\underline{p} < .001$; and awareness, $\underline{F}(6, 294) = 5.22$, $\underline{p} < .001$. Initial awareness did not

Figure 3. Posttest comprehension scores according to pretest levels of awareness, treatment, and grade.



interact with the treatment for the set of posttest comprehension scores or for any of them separately. This is strong evidence that the treatment effect was not limited to a particular subgroup of children. In the experimental group, children at all levels of awareness in both grades appear to have benefitted equally from the ISL program.

We were particularly interested in the different relationships between initial levels of awareness and performance on the comprehension tasks after the treatment. Therefore, separate ANOVAs were performed within each group and grade for each comprehension task that contrasted specific levels of awareness (see Figure 3). Third graders in the treatment condition with high initial levels of awareness performed significantly better than children with low awareness on the Gates-MacGinitie Comprehension Test, $F(1, 37) = 7.4$, $p <.01$, and on the error detection task, $F(1, 37) = 4.7$, $p <.01$. Third graders with different pretest levels of awareness in the control group did not exhibit significant differences in posttest performance on the same comprehension tasks. However, on the cloze task, third grade children with high initial awareness outperformed children with low awareness in both the experimental and control groups (p's $<.05$).

Fifth graders with high awareness at the time of the pretest performed better than those at low and middle awareness levels on the Gates-MacGinitie Comprehension Test, $F(1, 38) = 5.8$, $p <.05$, and the cloze task, $F(1, 38) = 5.3$, $p <.05$. This was true for children in both experimental and control groups. However, on the error detection task, low and middle awareness children performed almost as well as the high awareness children after receiving the treatment; whereas, children with high awareness in the control group continued to outperform children in the low and middle awareness groups, $F(1, 37) = 5.7$, $p < .05$.

Discussion

The purpose of this investigation was to examine the relationship between children's reading awareness and comprehension (i.e., metacognition and performance). In order to test the relationship we constructed a scripted interview and correlated children's knowledge about reading with their comprehension scores derived from three different reading tasks. The cross-sectional and experimental nature of the design allowed us to make comparisons between third and fifth graders and between children who received training in ISL and those who did not.

The data clearly reveal that children's knowledge about reading is positively related to their comprehension. Awareness and performance were correlated significantly at pre and posttests for children in both grades. The relationship was observed for all three reading tasks, the Gates-MacGinitie reading test, cloze passage, and error detection task, which indicates a general cognitive relationship between reading skill and awareness.

Although these data lend considerable support to the role of metacognition and awareness in children's learning, we must be cautious. Certainly, children's understanding about reading can be indexed in a variety of ways; some may be more strongly related to their comprehension skills than others. From our experience it seems prudent to question children about immediate aspects of their performance which are concrete and familiar to them. Our vague questions often provoked vague answers while explicit, narrow questions often produced the most informative responses from children. A second caveat that deserves mention is that awareness did change for children in the control groups and is a customary part of learning and development. Our experimental curriculum, ISL, increased awareness significantly but by a modest amount. Other teaching methods may be effective in promoting children's reading awareness. Certainly awareness depends on many factors in children's backgrounds and classrooms. Age, intelligence, and reading level exert profound impacts on children's reading; awareness may be just one aspect of reasoning that develops with proficient reading. Finally, we should note that reading awareness may not be uniformly important for all tasks at all times. Some occasions such as learning a new difficult task or concentrating on doing several things simultaneously may lend themselves to the beneficial effects of thinking about strategies for evaluating, planning, and regulating one's reading.

The nature of the larger study allowed us to examine the relationship between awareness and comprehension in more detail. First, we divided subjects into post hoc groups based on their relative levels of awareness so that we could analyze the reading performance of children with different awareness skills. In nearly every task and for every strata, children's reading skills on the comprehension tasks reflected better performance by children higher in reading awareness. Second, the larger study was experimental by design so that we could determine if reading awareness could be increased through direct instruction. The four month ISL program was quite successful and we have revised and elaborated the curriculum for use by classroom teachers. Children in both grades significantly raised both their reading awareness levels and their comprehension scores. Even when initial levels of performance were controlled, the training still exhibited a significant effect. Thus, awareness can be facilitated by direct instruction in the classroom with positive consequences for children's reading comprehension. We also found that the benefits of the awareness program were not limited to a particular group of children. Children at all levels of reading awareness gained from the instruction.

In conclusion, we would like to emphasize some direct applications of this study for teaching reading in the classroom. First, children are capable of learning about reading strategies directly. Teachers can supplement their lessons on reading by teaching children the declarative, procedural, and conditional aspects of reading strategies. Children may use this information to enhance their use of cognitive evaluation, planning, and regulation during reading. Second, an emphasis on transfer of knowledge between students and teachers is reciprocal so that students should be encouraged to talk about their conceptions of reading, themselves as readers, and their difficulties. In a sense, this instructional context provides for dialogues between the teacher and the class so that "thinking becomes public." Both teachers and students can benefit from more directly sharing their thoughts and feelings about reading. Third, we think that teachers can devise their own informal inventories of reading awareness to determine if their students have a thorough understanding of their assignments and the skills that they are being taught (c.f., Wixson, Bosky, Yochum, & Alvermann, in press). Students' answers can be informative and help to point out misconceptions that can be removed before the students become frustrated with reading. Explanations in the classroom about reading goals, strategies, plans, types of text, and feelings of competence might help children to comprehend what they read and to be more motivated to read on their own.

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Footnotes

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[2] Professor Marjorie Lipson provided the classroom instruction with enthusiasm and effectiveness and played a key role throughout the larger research project.

Chapter 3

Informed Strategies for Learning: A Program to Improve Children's Reading Awareness and Comprehension

Children learn to read at home and school with many forms of instruction. Whether teaching is formal or informal, though, parents and teachers often emphasize a basic set of fundamental comprehension skills. Beginning readers are routinely taught to pick out main ideas in text, to attend to important story details, to make inferences, and to connect ideas from different parts of stories. These skills are included in the scope and sequence charts of most basal reading series and are introduced as early as the first and second grade. But what happens if children do not master these skills easily? Usually they are relegated to repeated practice on the precise tasks that they cannot do well because the fundamental comprehension skills remain the same even as the difficulty of reading materials increases from grade to grade. As a consequence, early reading instruction often involves repeated workbook exercises that breed frustration in young readers. Indirect instructional approaches that depend upon drill and practice with basal materials rest on the assumption that children will induce good comprehension strategies if given sufficient opportunities.

The project reported in this paper reflects an alternative view, namely, that children can be taught to become more strategic readers by directly informing them about the nature of the task. The starting point of this research is the notion that conceptual awareness about the complexity of reading, the utility of strategies, and the effort and ability required to read can inform and guide the learning of beginning readers. We realize that there are many reasons that some children do not become proficient readers; some causes are social and some are motivational. The focus of this research is on cognitive and instructional constraints. For example, young children may not learn to vary their reading behavior or style because they are oblivious to different reading goals and types of text. They might equate reading with memorizing text, pronouncing the words correctly, or turning in a completed worksheet on time. They are simply unaware that reading is a constructive process of meaning apprehension that can vary with different purposes and kinds of material.

Children's reading comprehension can also be limited because they do not know about strategies, such as using context to discern new words, that can aid their understanding. They often do not realize that they should stop periodically to check their own comprehension and take corrective steps (Ryan, 1981; Wagoner, 1983). Finally, even when children know about the existence of strategies, they may not understand their benefits or rules of application clearly (Brown, 1980). In this case the actions are not strategic and they serve no function other than compliance with the teacher's directions. All of these shortcomings can be regarded as metacognitive deficiencies that might be ameliorated with proper instruction.

Metacognition is a term that refers to a broad spectrum of cognitive abilities (Brown, 1978; Flavell, 1978). It has become a popular term in theories of reading because it characterizes the kinds of understanding about reading that novice readers need to acquire (Brown, Armbruster, & Baker, in press). Two basic aspects of metacognition are the awareness of cognitive states and abilities and the regulation of thinking. For example, if I am aware of a comprehension bottleneck, I could reread the material or ask someone for help. According to Flavell (1978) metacognition includes awareness of person, task, and strategy variables. Person variables are one's own abilities, beliefs, and knowledge. Task variables refer to knowledge about the complexity and difficulty of tasks. Strategy variables reflect the understanding about actions that one can take to facilitate problem-solving. Metacognition is more than passive knowledge of the variables that influence performance; it is also instrumental in the regulation of thinking.

Part of the appeal of the term "metacognition" is that it captures the executive function of information processing. It is characterized as a higher order process that orchestrates and directs other cognitive skills. Paris and Lindauer (1982) characterized the executive function in terms of evaluating, planning, and regulating one's thinking. Evaluation of person, task, and strategy variables results in an assessment of the task difficulty relative to one's abilities and an assessment of the relative effectiveness of different strategies. Evaluation is a measure against a standard such as effort, ease, or certainty within a problem-solving context. Planning involves the allocation of time and effort in order to optimize task solutions. The good reader, like the good problem solver, selects reasonable goals and generates suitable means to accomplish them. Regulation refers to the ability to follow one's chosen plan and to monitor its effectiveness. Sometimes new goals and new plans must be formulated, while at other times it is better to persevere on the chosen path.

But we must be wary of reifying the term metacognition and its executive function. Critics of metacognition point out that it raises the specter of a homunculus and evades the issue of how thinking is directed by pushing a causal agent deeper into the mind. Skepticism is increased when metacognition is expressly undefined as tacit knowledge and when a variety of vague powers are attributed to it. We cannot solve those dilemmas easily but we have tried to constrain our use of the term to two classes of behavior; (a) reported awareness about reasoning and

(b) instances of evaluating, planning, and regulating one's thinking. This dichotomy is consistent with information processing theories that emphasize declarative and procedural knowledge (Resnick, 1983). Declarative knowledge corresponds to the awareness of person, task, and strategy variables and can be regarded as "knowing that." For example, one knows that reading War and Peace is difficult or that making a chapter summary can aid recall. Procedural knowledge corresponds somewhat to evaluating, planning, and regulating and can be regarded as "knowing how." It is more than just a catalogue of actions available to the learner, though; it includes an understanding of the procedures themselves.

But knowing that and knowing how are not sufficient guarantees that children will apply strategies appropriately. They need to learn when and why various strategies should be used to accomplish different purposes. Paris, Lipson, and Wixson (1983) refer to this understanding as "conditional knowledge" because it informs learners about the value and situational appropriateness of various strategies. Children need to know when a strategy should be applied in order to integrate what they know about the task requirements with the costs/benefits of the strategy and the final goal. Conditional knowledge also involves knowing the rationale for using a particular strategy. It is unlikely that children will adopt and use actions as reading strategies if they do not understand the value or reasons for doing so. The functional value of strategies is a crucial aspect of learning that has been ignored too often in accounts of both reading instruction and metacognition. One of our primary goals in this project was to teach children the reasons for using various comprehension strategies so that they could become self-directed, independent readers.

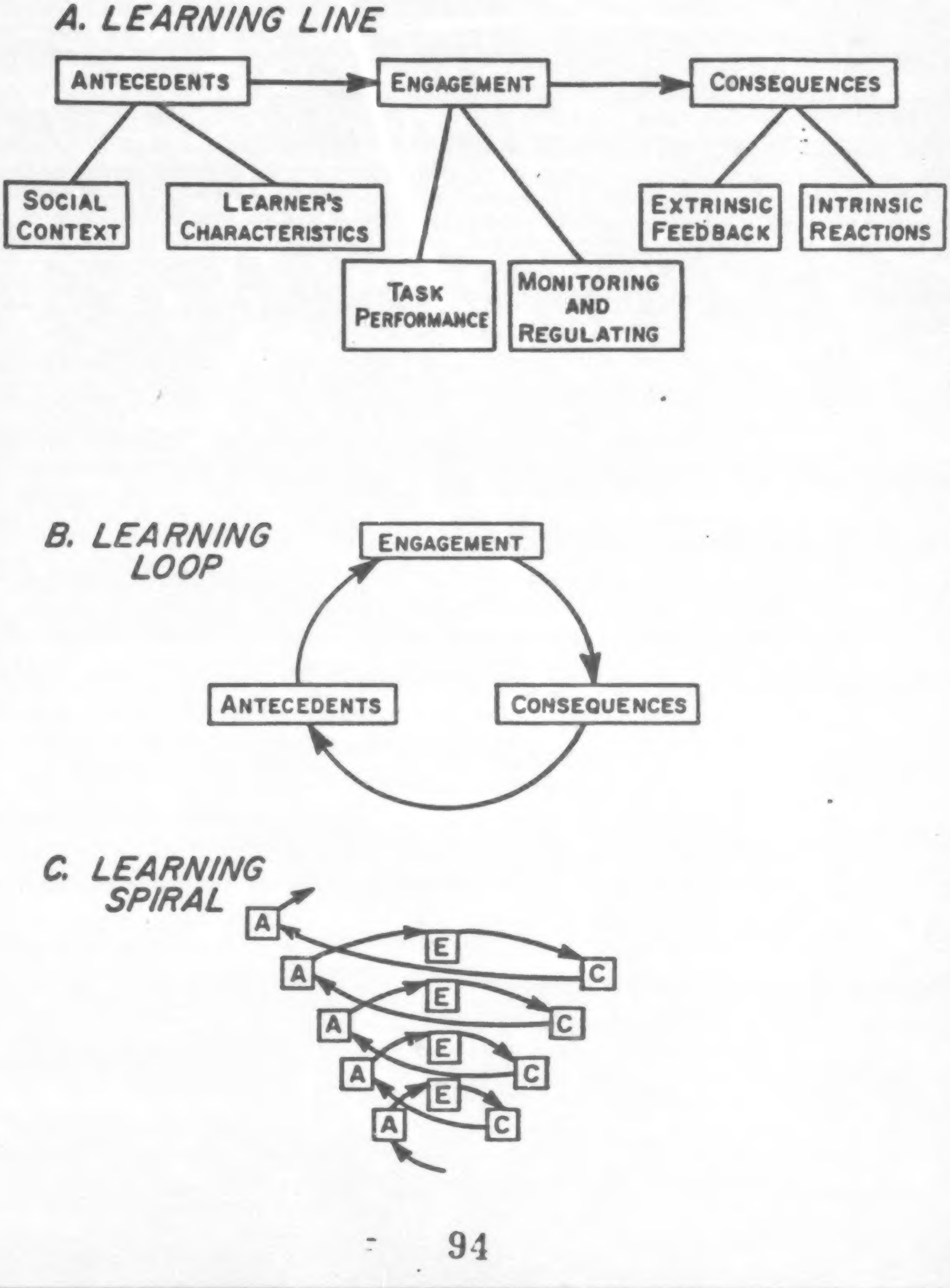
But how do children become strategic readers? Paris and Cross (1983) have presented a model of learning that illustrates how understanding and motivation, skill and will, become fused by repeated experience. Three phases of task engagement and the cyclical nature of learning are represented schematically in Figure 1.

Insert Figure 1 about here

The antecedents of task engagement include activation of existing knowledge and the formulation of intentions and goals. Antecedents also include evaluation of task parameters, planning, and the allocation of effort according to these plans. During task engagement, strategies are applied according to plans while progress is monitored and regulated. Children usually acquire new knowledge following task performance that includes information about their learning strategies and approaches to the task.

Figure 1

MODEL OF LEARNING FROM PARIS & CROSS (1983)


A. LEARNING LINE

B. LEARNING LOOP

C. LEARNING SPIRAL

ANTECEDENTS
ENGAGEMENT
CONSEQUENCES
SOCIAL CONTEXT
LEARNER'S CHARACTERISTICS
TASK PERFORMANCE
MONITORING AND REGULATING
EXTRINSIC FEEDBACK
INTRINSIC REACTIONS
ENGAGEMENT
ANTECEDENTS
CONSEQUENCES
A
E
C
A
E
C
A
E
C
A
E
C
A

They also can compare their performance to earlier efforts as well as to other people. The affective reactions and derived knowledge become resources for future engagements (see Figure 1b) unless no learning has occurred. According to the recursive model, learning can be characterized as a spiral (Figure 1c) that becomes progressively more complex with age and experience. An important feature of the framework is the emphasis on social contexts of learning in addition to the individual's knowledge and motivation. Teachers and parents provide critical support, both cognitive and affective, to young learners. In this learning framework, the development of strategic readers is fostered by repeated practice, direct instruction, social support, and conceptual awareness of the skills required at each phase of task engagement.

In this project we have tried to design an "ecologically valid" form of instruction so that children could increase their awareness and use of reading strategies. There are many reading skills that depend upon metacognition or declarative, procedural, and conditional knowledge (Baker & Brown, in press). For example, it is important that children recognize and clarify their purposes for reading (Brown & Smiley, 1978). They also need to be able to identify main ideas in text and to distinguish important from unimportant information (Brown & Smiley, 1977). Other reading skills that depend on metacognition include:

monitoring one's own comprehension (Harris, Kruithoff, Terwogt, & Visser, 1981; Paris & Myers, 1981), evaluating comprehension to determine if goals are being achieved (Brown, Armbruster, & Baker, in press), and repairing comprehension failures (Wixson, 1979). It is the functional value of these skills that is critical to the young learner. It is not enough to know about them and how to apply them; readers must realize when and why they are effective. It was our goal in this study to convince children that these strategies are important and can improve their comprehension. It is our view that children will make plans, summarize main points, reread, and otherwise expend effort to regulate their reading only when they understand the importance, necessity, and benefits of the strategies.

The project had two basic goals. First, we wanted to test the hypothesis that by teaching children about the existence, use, and value of reading strategies we could improve their reading comprehension. Accordingly, the study provides an experimental test of the relation between metacognition and reading comprehension. Second, the study is a test of a flexible, group-administered instructional reading program called Informed Strategies for Learning (ISL). ISL provides conceptual information about reading strategies directly and explicitly to children in the classroom as an adjunt to their regular reading curriculum.

The instruction was designed to increase students' and teachers' understanding of (a) the goals of reading, (b) strategies for promoting comprehension, and (c) strategies for correcting comprehension failures. Specific strategies for evaluating and regulating reading were taught to children in four intact classes. Primary features of the direct instruction (cf. Duffy, Sherman, & Roehler, 1977) included (a) directing children's attention to the material to be learned, (b) achieving high levels of student involvement, and (c) providing frequent practice and immediate feedback. We used concrete metaphors such as "Be a reading detective" to direct children's attention to the lessons. These metaphors provided analogies for the cognitive skills that made them comprehensible and easy to recall. They were graphically represented on large bulletin board displays as well as on weekly worksheets. One of the key ingredients of ISL is the group discussions of reading strategies. These insure students' attention and participation. Most children enjoyed the discussions and participated actively. Classroom teachers were encouraged to apply the strategies taught in the ISL lessons to other content areas. We provided them with guidelines and suggested bridging activities and it was evident that teachers used them often.

Method

Subjects and Setting

The subjects in the study were 87 third graders (mean age = 8 years, 5 months) and 83 fifth graders (mean age = 10 years, 5 months) from eight intact classes. Two third grade and two fifth grade classes received training and the remaining four classes served as controls. Separate schools were chosen for experimental and control classes in order to prevent teachers and students from sharing their knowledge gained from training with the control groups. As a result, one third grade and one fifth grade class from each of four schools were assigned to either the treatment or the control condition. Prior to assigning the experimental conditions, the schools were matched roughly on demographic and achievement data. As it turns out, the experimental and control groups proved to be very similar on the pretest measures. Pretesting occurred in the fall of the school year and posttesting was conducted in May, one month after the last lesson. This experimental design is an example of the nonequivalent control group design, discussed in detail by Campbell and his colleagues (Campbell & Stanley, 1963; Cook & Campbell, 1979).

Measures

This project included a battery of measures designed to assess children's reading awareness, comprehension, and attitudes.

See Paris, Lipson, Cross, Jacobs, Oka, & DeBritto (1982) for further details. Three comprehension measures used at the pretest and again at the posttest will be reported in this paper. These are the comprehension subtest of the Gates-McGinitie Reading Tests (MacGinitie, 1978), the paragraph reading subtest of the Tests of Reading Comprehension (Brown, Hammill, & Wiederholt, 1978), and our own versions of the cloze procedure (see McKenna & Robinson, 1980). All three of these measures were group administered. In addition to the comprehension measures we administered a test designed to measure how well children learned the information included in the ISL lessons. This test was administered at the posttest only.

The comprehension subtest of the Gates-McGinitie Reading Tests (GATES) consists of a series of short paragraph-length stories followed by from two to four multiple-choice questions designed to assess children's understanding of each story. Test level C (designed for third grade students) was administered to third grade classes and test level D (designed for fourth through sixth grade students) was administered to fifth grade classes. Form 1 of each level was used at the pretest and form 2 was used at the posttest. Each child's extended scale score was transformed in order to make it commensurate with other comprehension scores. This transformation consisted of subtracting 250 from the score and then dividing the result by 10. Test levels, forms, and derived scores are discussed in the Teacher's Manual that is available from the publisher.

The paragraph reading subtest of the Tests of Reading Comprehension (TORC), similar in format to the GATES, consists of six paragraph-length stories each followed by five multiple-choice questions. These questions are of three types: (a) one question asks for the best title of the story; (b) two questions ask for details about the story; and (c) two questions require children to make inferences about the story. The TORC has a single version, designed for use throughout the elementary school years, that was administered to both third grade and fifth grade children in the study. The same form, the only one available, was used at both pretest and posttest. The TORC score for each child was the total number of correct responses.

We constructed four different versions of the cloze procedure (CLOZE), one for each grade at each of the two testing sessions. The passages used to construct the different versions were taken from the Classroom Reading Inventory (Silvaroli, 1976). Second and fourth grade level passages were used for the third and fifth grade versions, respectively. With the exception of the first and last sentences of the passages, every fifth word was deleted from the text creating 13 empty slots for the children to fill in. Each paragraph was typed in large print on a single page with a title and picture.

Children's CLOZE responses were scored according to the following procedure: (a) responses that were both semantically and syntactically appropriate to the missing word were awarded two points; (b) responses that were either semantically or syntactically appropriate, but not both, were awarded one point; (c) blanks and responses that were neither semantically nor syntactically appropriate were awarded zero points. Semantic appropriateness was judged in relation to the text meaning and syntactic appropriateness was judged in relation to the sentence construction. A key was formed by assigning all of the children's responses to one of the above three categories, and this key was then used to score the CLOZE responses. With this procedure each child's total score could range from 0 to 26.

In addition to the above measures of comprehension we administered a test specifically designed to assess how well children learned information in the lessons (TEST). This TEST is a multiple-choice, group-administered test consisting of 20 questions with three responses to each question. A copy of this instrument is included in Table 1.

Insert Table 1 about here

Training

The purpose of the training was to inform children in the experimental classrooms about the goals of reading and both the

Table 1

Questions Used to Measure Children's Learning of ISL Lessons

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1. The best way to focus on the important points of a story that you read is to
   - A. underline the main ideas
   - B. read the story 3 or 4 times
   - C. ask someone else to explain it
2. The main goal of reading is
   - A. to say all the words
   - B. to understand the meaning
   - C. to read quickly without mistakes
3. Mark the one that is false.
   - A. Skimming tells you what kind of reading it is.
   - B. Skimming helps you study before and after you read.
   - C. Skimming is reading every word more than once.
4. Reading and puzzles are similar because
   - A. only adults do them right
   - B. both are very easy
   - C. you need to stop in the middle of both sometimes to see if you are getting closer to the goal
5. Skimming is
   - A. reading all the short words and not the long ones
   - B. a quick way of finding out what the story is about
   - C. something that only poor readers do

Table 1 (continued)

---

6. When you finish reading you should
    - A. think about the story and make sure you understand it
    - B. close the book and do something else
    - C. not go back and read it over
7. Reading the same story twice
    - A. can help you understand the difficult parts
    - B. is boring so you shouldn't do it
    - C. takes too much time
8. A bag of tricks for reading helps you read better because
    - A. reading is tricky
    - B. you don't have to think if you know the tricks
    - C. special plans and tricks help you understand the story
9. If you cannot read a word in a story, you should
    - A. guess it or make one up
    - B. skip it
    - C. use the rest of the sentence as a clue
10. A really good plan for your reading is
    - A. to skip the hard parts
    - B. to read every word over and over
    - C. to look back in the story to check what happened

Table 1 (continued)

---

11. Mark the answer that would put you on the road to reading disaster
    - A. Skipping sentences that are hard to understand
    - B. Checking to see if sentences make sense and fit together
    - C. Asking help for new vocabulary words
12. A good reading detective
    - A. gathers clues about the purpose, content, and difficulty of the reading
    - B. reads the story first and asks questions later
    - C. reads very quickly
13. Saying a story in your own words is important because
    - A. you don't have to worry about what the story means
    - B. then you know if you tracked down and rounded up the main ideas in a summary
    - C. you can tell if it is fact, fiction, or opinion
14. Being a reading detective means that you
    - A. use a magnifying glass when you read
    - B. read fast or slow depending upon the kind of story and reason for reading it
    - C. like to read mystery stories better than animal stories

Table 1 (continued)

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15. The best way to round up your ideas and prevent them from slipping away is to
    - A. make sure that you can spell all the words
    - B. mark your place in the book with a bookmarker
    - C. ask yourself who, what, why and where questions

16. Mark the reading sign that is a bad plan for your reading

A.	Stop	means to think and say it in your own words
B.	Curve	means to skip the hard parts
C.	Speed Limit	means to adjust your speed to the reading task

17. What is the best reason for judging your reading when you finish?
    - A. So you can tell your teacher that you're through.
    - B. So you can be sure that you understand the meaning.
    - C. So you can tell if the author was telling the truth.

18. A good reading map
    - A. is a picture
    - B. helps you plan your reading
    - C. is not necessary

Table 1 (continued)

---

19. Inferring the hidden meaning when you read means that
    - A. you figure out what happened even though the words didn't say it exactly
    - B. you try to memorize what the author said
    - C. you need to use a dictionary to understand it completely
20. The 3 kinds of meaning in reading are
    - A. literal, inferential, personal
    - B. fiction, poetry, comics
    - C. words, sentences, paragraphs

existence and value of particular reading strategies. An additional goal was to provide them with actual classroom practice in applying these strategies. The training was conducted for four months and included three modes of instruction. First, children received thirty-minute group lessons twice each week from M. Lipson. During these lessons children participated in classroom discussions of the strategies. They were involved in question-and-answer sessions and filled out worksheets that required use of the target strategy. Second, bulletin boards were provided for each class. These bulletin boards were used as visual aids for the lessons and served as reminders when the experimenter-teacher was not in the classroom. Third, classroom teachers were encouraged to adapt the weekly lessons to their own instruction in reading and other curriculum areas. For this reason teachers in the experimental classrooms were provided with weekly modules that outlined the purpose, rationale, and objectives of the lessons. The modules also contained guidelines for translating lessons into daily activities for each teacher's use.

Training was divided into three phases that each lasted 5-6 weeks. The first phase addressed the general issue of awareness of reading goals, plans, and strategies. The second phase focused on specific strategies related to comprehending text meaning. The final phase emphasized comprehension monitoring; children learned about specific strategies for evaluating and regulating their reading. The topics and metaphors for the 14 lessons are shown in Table 2.

Insert Table 2 about here

As evident in Table 2, there was emphasis on awareness of task and strategy variables as well as on evaluation, planning, and regulation. The entire second phase was devoted to the teaching of the goals of reading, a topic that has been found to be a major deficiency in the metacognitive knowledge of young readers. Throughout all of the lessons there was a concerted effort to teach the students when these various strategies should be applied and why each one is necessary for better comprehension.

Finally, it is important to note that the control classrooms were not neglected during the training period; we actually spent more time in the control classrooms than in the experimental classrooms. We spent time tutoring, showing movies, and teaching group lessons on topics unrelated to reading (e.g., ecology and nutrition). These activities were provided according to the preferences of individual teachers in the control classrooms. We tried to provide all children in the study with useful educational experiences.

Results

Before considering the results in detail, we would like first to discuss the approach to data analysis employed in this section.[2]

Table 2

Comprehension Skill Training Modules

A. Awareness of Reading Goals, Plans, and Strategies
   1. Purposes and skills in reading
      "Reading is like a puzzle"
   2. Comprehension strategies
      "A bag full of tricks for reading"
   3. Task evaluation
      "Be a reading detective"
   4. Forming plans
      "Plan your reading trip"

B. Comprehension and Meaning
   5. Reading goals and kinds of meaning
      "What's in the meaning?"
   6. Abstracting critical information
      "Tracking down the main idea"
   7. Ambiguity and inference
      "Infer the hidden meaning"
   8. Summarizing main points
      "Round up your ideas"

C. Evaluating and Regulating Reading
   9. Critical evaluation
      "Judge your reading"

Table 2 (continued)

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10. Comprehension monitoring

    "The road to reading disaster"

11. Resolving comprehension failures

    "Road repairs"

12. Speed versus accuracy

    "Skimming along"

13. Abstracting and highlighting information from text

    "Focus and develop the big picture"

14. Final review

We eschew traditional approaches for analyzing the data from the nonequivalent control group design in favor of the one used here because we have a direct measure of our intervention. TEST is a measure of the degree of information learned by students in experimental classrooms. It is reasonable to assume that this variable, more than simply membership in the treatment condition, will mediate the degree of impact that ISL had upon reading comprehension. This measure allows us to take advantage of path analysis (see Kenny, 1979; Kerlinger & Pedhazur, 1973), so that causal influences among variables over time can be discerned. In this introduction to the results section we will describe the modeling and testing procedure used for all of the path analyses to follow.

The model shown in Figure 2a was used for the analysis of all three measures of reading comprehension.

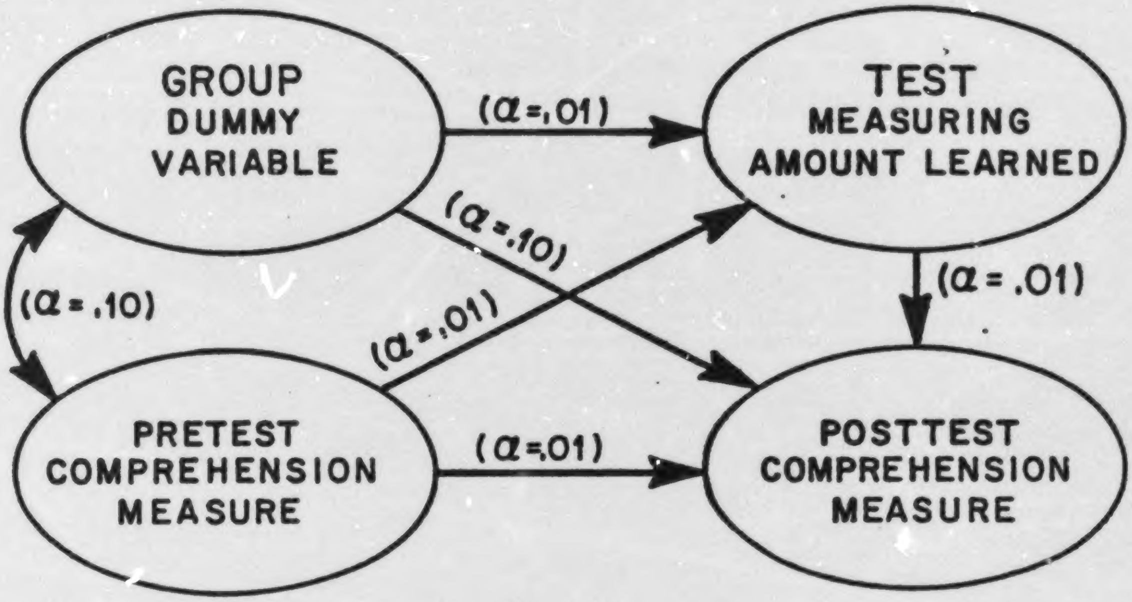
Insert Figure 2 about here

The model consists of four variables connected by five directed, or causal, paths and one undirected, or correlational path. The four variables are (a) a dummy variable coded 0 for the control group and 1 for the experimental group (GROUP); (b) the TEST measuring children's mastery of information in the lessons; (c) a pretest comprehension measure; and (d) the same measure, assessed at the posttesting. Each of the arrows has a different

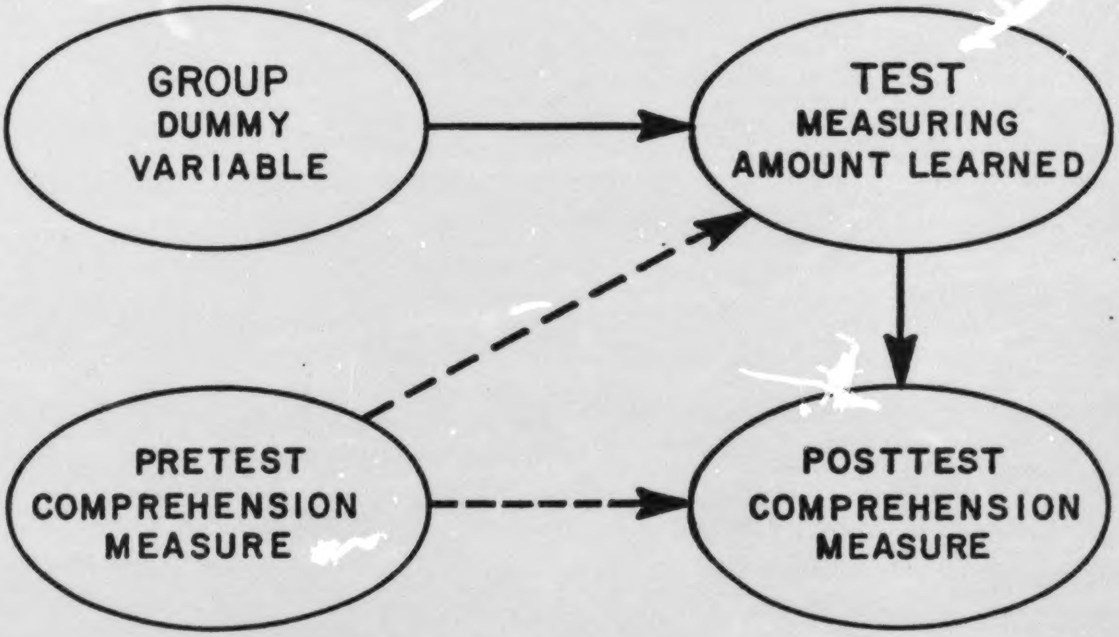
Figure 2

PATH ANALYSIS MODELING AND TESTING STRATEGY

(a) Full Model


GROUP
DUMMY
VARIABLE
TEST
MEASURING
AMOUNT LEARNED
(α=.01)
(α=.10)
(α=.10)
(α=.01)
(α=.01)
PRETEST
COMPREHENSION
MEASURE
(α=.01)
POSTTEST
COMPREHENSION
MEASURE

(b) Reduced Model


GROUP
DUMMY
VARIABLE
TEST
MEASURING
AMOUNT LEARNED
PRETEST
COMPREHENSION
MEASURE
POSTTEST
COMPREHENSION
MEASURE

meaning in the context of this model. The two-headed arrow between GROUP and the Pretest Comprehension Measure (Pretest) reflects the possibility that one of the two treatment groups will have, on the average, higher scores on the Pretest than will the other. In this case there will be a correlation between GROUP and the Pretest that differs from zero; the sign will depend upon which group has the higher mean. The horizontal arrow from Pretest to the Posttest Comprehension Measure (Posttest) represents the stability of the comprehension measure. The value of this path is an estimate of the amount of variance in the Posttest that is accounted for by variance in the Pretest. The other horizontal path represents the effect of the intervention of the TEST measure. This is a direct assessment of the efficacy of the strategic training. The vertical path from TEST to the Posttest is an indirect assessment of the treatment effect. It represents the impact that learning strategic reading skills can have on children's reading comprehension.

The diagonal path from GROUP to Posttest represents the possibility that there will be a direct effect of the intervention on the Posttest independent of the indirect effect mediated by TEST. Such an effect could arise, for example, if the intervention led to a behavioral outcome that was not measured by TEST but still affected children's reading comprehension. If we can presume that the essential features of the intervention are captured by TEST, then such a direct effect of the treatment on the Posttest should be considered an artifact of the training. The diagonal path from Pretest to TEST reflects the possibility that performance on the TEST is a function of previous reading skill as well as what is learned during the intervention. The presence of this path seems reasonable since children probably learn many of the concepts and strategies taught in ISL on their own. Of course, one of the premises of our approach is that children will benefit if instruction is organized so that learning is not haphazard (or even nonexistent).

Elements of the model-testing procedure are also presented in Figure 2. Notice that associated with the paths of Figure 2a are the alpha levels that will be used for significance tests on each of the path coefficients. The alphas associated with the correlation between GROUP and the Pretest and the diagonal path from GROUP to the Posttest both have a value of .10. Large alphas are being used in these two cases because the hypothesis being tested is really the null hypothesis. In other words, we are interested in dropping these paths from the model, and are hence hoping that the coefficients will not be significantly different from zero. As a consequence, it is desirable to test these path coefficients using a test with high power. The remaining alphas all have the value .01. The crucial paths for our hypothesis are the horizontal path from GROUP to TEST and the vertical path from TEST to the Posttest. These two paths must both be retained in order for the experimental curriculum to show an impact on posttest comprehension scores. Since we are carrying out significance tests on six different versions of the model shown in Figure 2a (two grades each with three measures), we have decided to use the relatively conservative value of .01 as a precaution against an inflated error rate. The remaining two paths, going diagonally from the Pretest to TEST and horizontally from Pretest to Posttest, are not directly related to the hypothesis but will be tested using an alpha level of .01 for the sake of consistency.

If ISL improves reading comprehension, then the final model will look something like that shown in Figure 2b. The two paths leading from the Pretest are represented by dashed lines because they are only tangentially related to the research hypothesis. The two paths missing in the reduced model are essentially nuisances, and it would be desirable to have them dropped from the full model. The two critical paths are represented by continuous lines. The procedure that will be used to drop paths from the model is to first drop the smallest path among all paths that have a nonsignificant path coefficient (if there are any). Of course, as discussed previously, different coefficients will be tested using different alpha levels. After the first path is dropped the model will be re-estimated using all remaining paths. Then the smallest nonsignificant path from this reduced model will be eliminated and so on until all path coefficients remaining in the model are significantly different from zero. This final version will, in each case, be called the "reduced" model.

Descriptive Statistics

Table 3 shows the correlations among all comprehension

Insert Table 3 about here

measures as well as the GROUP dummy variable for both third and fifth graders. Correlations in Table 3 are missing value correlations; the ns for third grade range from 77 to 87, and the ns for fifth grade range from 79 to 83. Missing value correlations have been presented because; (a) when using a complete cases correlation matrix in the third grade the n drops to 71, and (b) missing value correlations are more consistent with the correlations obtained in path analyses. However, the choice matters little, because the differences between missing value and complete cases correlations are small, with the largest difference between estimates being .08 in the third grade and .05 in the fifth. In general, the maximum possible number of cases are used for any given estimate, whether it is a sample mean, correlation, or path coefficient.

The correlations in Table 3 provide some general information about the relationships among variables. First, in both grades there is a tendency for GROUP to be more highly correlated with the posttest comprehension measures than with the pretest measures. This is a gross indication that the intervention did have an

Table 3

Correlations Among Comprehension Measures and Groups for Third and Fifth Graders

Correlations (rs)

Third Grade

GROUP	1.00							
GATES 1	.21	1.00						
TORC 1	-.07	.74	1.00					
CLOZE 1	.00	.73	.75	1.00				
TEST	.52	.65	.37	.45	1.00			
GATES 2	.25	.75	.67	.66	.63	1.00		
TORC 2	.08	.63	.64	.66	.44	.73	1.00	
CLOZE 2	.29	.77	.63	.69	.63	.74	.66	1.00
	GROUP	GATES 1	TORC 1	CLOZE 1	TEST	GATES 2	TORC 2	CLOZE 2

Fifth Grade

GROUP	1.00							
GATES 1	-.01	1.00						
TORC 1	-.04	.85	1.00					
CLOZE 1	-.02	.62	.55	1.00				
TEST	.35	.59	.49	.44	1.00			
GATES 2	.03	.84	.79	.63	.46	1.00		
TORC 2	.08	.79	.75	.60	.48	.73	1.00	
CLOZE 2	.17	.72	.70	.54	.66	.67	.64	1.00
	GROUP	GATES 1	TORC 1	CLOZE 1	TEST	GATES 2	TORC 2	CLOZE 2

Note: See text for explanations of variable names.

effect on children's reading comprehension. Second, the correlation between GROUP and TEST is substantial, suggesting that this measure was sensitive to children's learning. Third, correlations among the three measures of comprehension are all high, suggesting that these instruments all measure the same ability. Fourth, for those comprehension measures that have the highest posttest correlations with GROUP, the correlation between TEST and these measures is higher at the posttest than at the pretest. This suggests that TEST does in fact mediate the impact of the intervention on reading comprehension.

We can understand these relationships more clearly by examining the means shown in Table 4.

Insert Table 4 about here

First, the reason for the positive correlation between GROUP and GATES 1 in the third grade is that the mean in the experimental group (21.0) is higher than in the control group (17.6). However, the small negative correlation between GROUP and TORC 1 in the third grade is explained by the difference in means favoring the control group (11.9 vs. 10.9). Similarly, the slight negative correlations between GROUP and other pretest comprehension measures are due to the small differences in pretest means favoring the control group. Similarly, the reason for increases from pretest to posttest in the correlations of GROUP with the comprehension

Table 4

Mean Comprehension and Test Scores for Each Group and Grade

Grade & Condition	Pretest		Posttest	
	M	*SD*	*M*	*SD*
Third Grade				
Experimental				
GATES	21.0	8.0	24.1	6.1
TORC	10.9	7.2	17.3	4.5
CLOZE	12.0	8.7	17.3	6.6
TEST	-	-	17.0	3.7
Control				
GATES	17.6	7.9	21.2	5.4
TORC	11.9	5.4	16.5	5.5
CLOZE	11.9	7.3	13.2	7.1
TEST	-	-	12.9	3.1
Fifth Grade				
Experimental				
GATES	25.6	7.6	26.9	6.6
TORC	18.4	5.8	20.0	5.3
CLOZE	14.0	6.7	20.8	5.4
TEST	-	-	16.9	2.8

Table 4 (continued)

Control				
GATES	25.8	7.4	26.5	7.4
TORC	18.8	4.9	19.2	5.6
CLOZE	14.2	6.5	18.8	6.2
TEXT			14.5	3.6

Note: See text for explanations of variable names.

measures is that the experimental groups made greater gains on these measures than did control groups.

Path Analyses

The first analysis to be presented is shown in Figure 3.

Insert Figure 3 about here

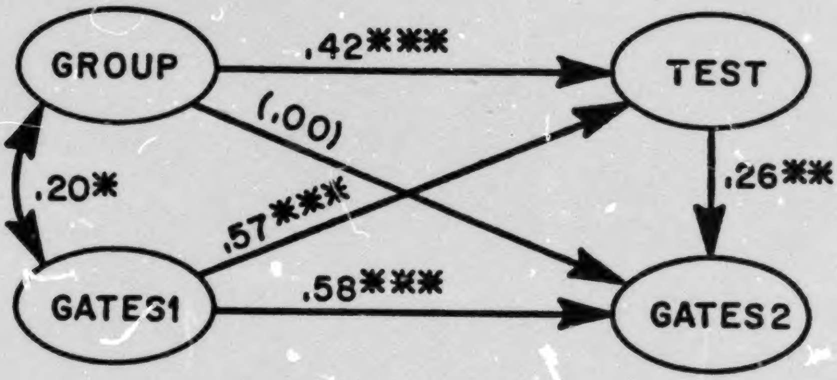
This figure depicts the path analysis for the treatment effect on the GATES in the third grade. The full model is shown in Figure 3a and the reduced model is shown in Figure 3b. For this figure and all of the figures to follow one "*" indicates $p < .10$, two "**" indicate $p < .05$, and three "***" indicate $p < .01$. In this case there was only one step in going from the full model to the reduced model; this involved dropping the path from GROUP to GATES 2 and re-estimating the path coefficients leading to GATES 2. Although the path from TEST to GATES 2 was only significant at the .05 level in the full model, it was significant at the .01 level in the reduced model and hence was not dropped.

This analysis shows three things. First, the "nuisance" correlation between GROUP and GATES 1 does not drop out of the model. This might be cause for alarm except that this pattern is not repeated for any of the other analyses. Second, there are substantial paths leading from GATES 1 to TEST and GATES 2. This suggests that performance on both of these measures at the posttest is highly dependent on existing reading skill. This is not a

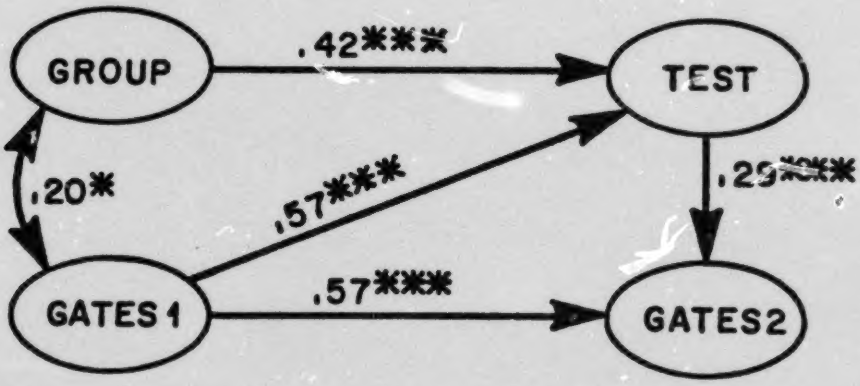
Figure 3

PATH ANALYSIS OF THIRD GRADE GATES

(a) Full Model


GROUP
TEST
GATES1
GATES2
.42***
(.00)
.20*
.57***
.26**
.58***

(b) Reduced Model


GROUP
TEST
GATES1
GATES2
.42***
.20*
.57***
.29***
.57***

surprising finding and it will in fact be repeated for all of the analyses to follow. Third, the treatment did have a significant indirect impact on children's reading comprehension as measured by the GATES. The paths leading from GROUP to TEST and from TEST to GATES 2 are evidence for this conclusion. Thus, the intervention increased children's knowledge about reading strategies and this in turn led to improvements in their reading comprehension.

A similar analysis for the fifth grade is shown in Figure 4.

Insert Figure 4 about here

In this case three paths are dropped from the full model, including the path from TEST to GATES 2, which suggests that the intervention did not have a significant effect on the fifth grade children's GATES performance. One explanation for this finding is suggested by the high values of the path from GATES 1 to GATES 2. Perhaps performance on the GATES has stabilized by the fifth grade so that these scores are relatively impervious to intervention.

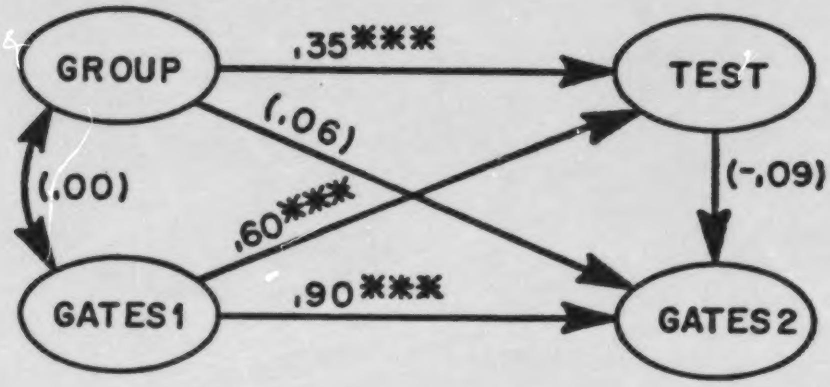
Figures 5 and 6 illustrate the path analyses of the third

Insert Figures 5 and 6 about here

and fifth grade TORC. Two paths were dropped from the full model in the third grade and three paths were dropped from the fifth grade model. The third grade TORC results are similar to the

Figure 4
PATH ANALYSIS OF FIFTH GRADE GATES

(a) Full Model


GROUP
TEST
GATES1
GATES2
.35***
(.06)
(.00)
.60***
(-.09)
.90***

(b) Reduced Model

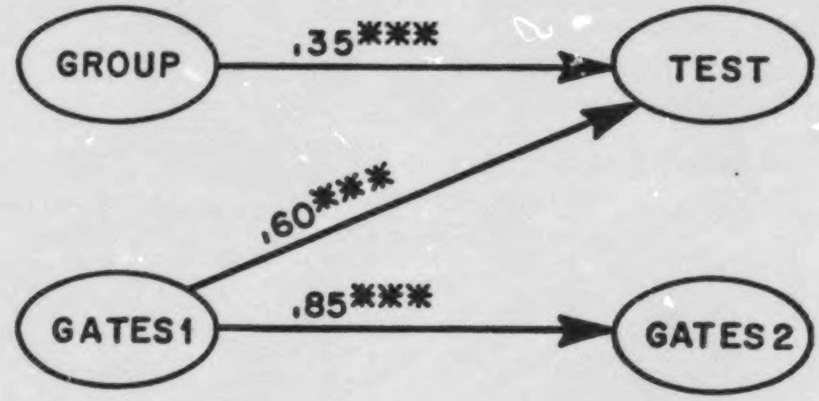
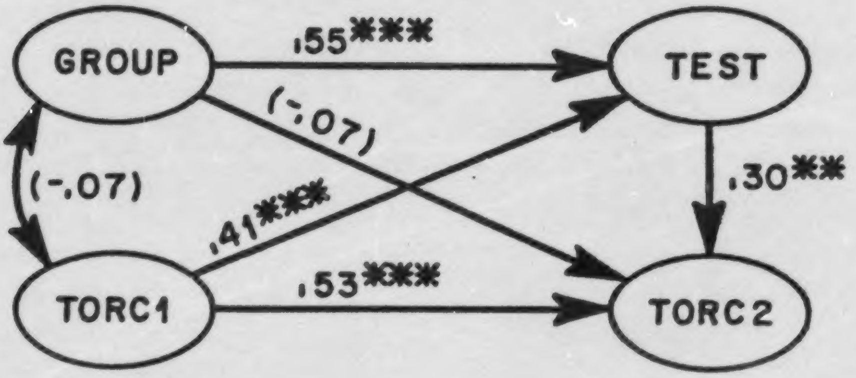

GROUP
TEST
GATES1
GATES2
.35***
.60***
.85***

Figure 5
PATH ANALYSIS OF THIRD GRADE TORC

(a) Full Model


GROUP
.55***
TEST
(-.07)
(-.07)
.30**
.41***
.53***
TORC1
TORC2

(b) Reduced Model

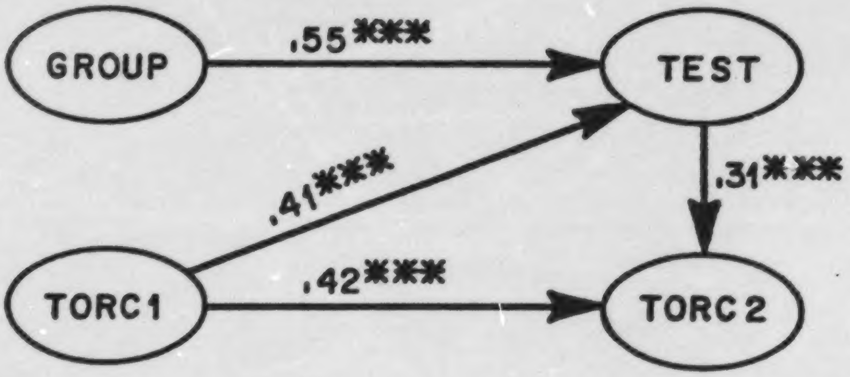
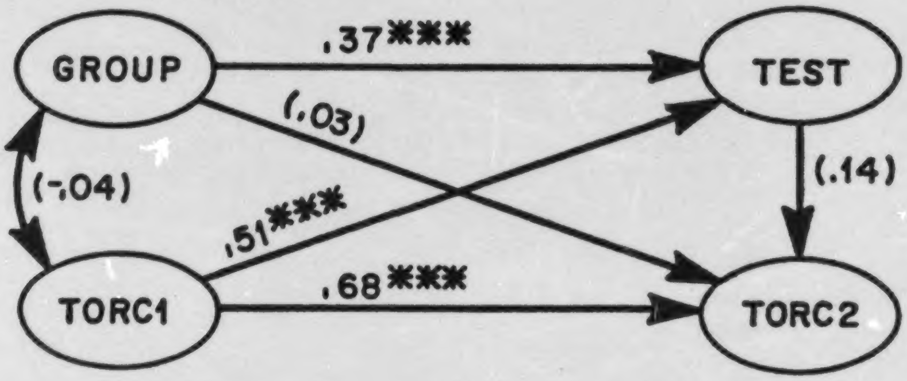

GROUP
.55***
TEST
.31***
.41***
.42***
TORC1
TORC2

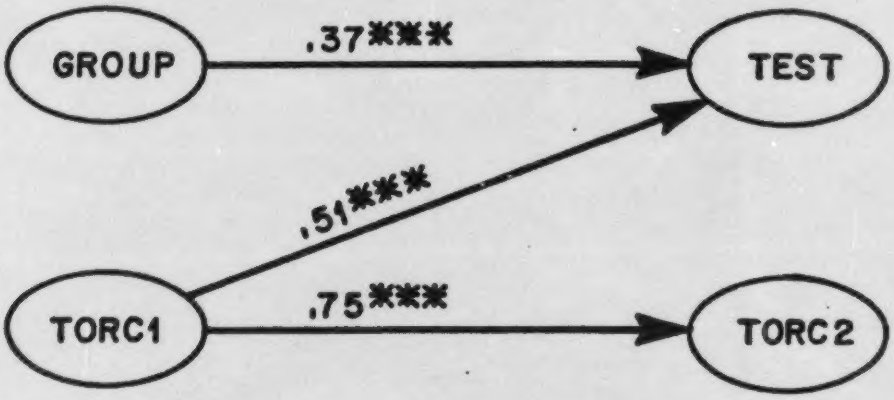
Figure 6

PATH ANALYSIS OF FIFTH GRADE TORC

(a) Full Model


GROUP
.37***
TEST
(.03)
(-.04)
(.14)
.51***
.68***
TORC1
TORC2

(b) Reduced Model


GROUP
.37***
TEST
.51***
.75***
TORC1
TORC2

third grade GATES results in that (a) TORC 1 accounts for a high percentage of the variance in both TEST and TORC 2 and (b) the intervention had a significant indirect impact on the posttest TORC scores. The fifth grade TORC results are similar to the fifth grade GATES results. The intervention evidently did not have a significant effect on the fifth grade children's TORC performance. Notice that in this case also the stability of the TORC is high, as is indicated by the high value of the path between TORC 1 and TORC 2.

Figures 7 and 8 show the results of the path analyses of the third and fifth grade CLOZE. In this case, the results for the two grades are similar. In both cases two paths have been dropped from the full model and the reduced model matches the one shown in Figure 2b. Although the strength of the effect is greater in the third grade than in the fifth, the intervention had a significant indirect effect on children's CLOZE performance in both grades.

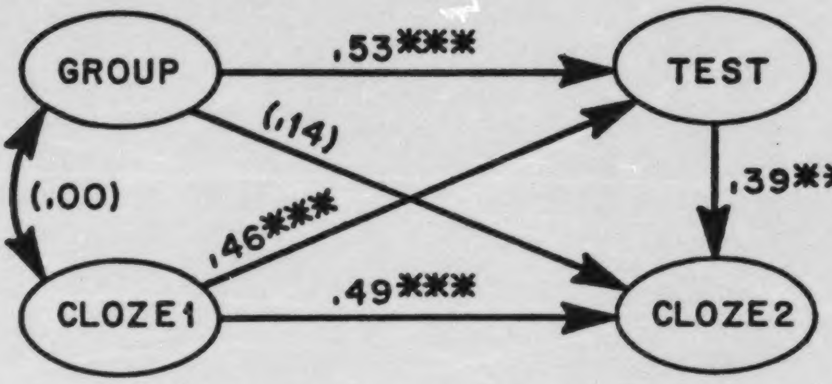
Insert Figures 7 and 8 about here

Discussion

The metacognitive training had a positive and significant impact on children's reading comprehension. The effects were evident on all three comprehension measures for third graders while the training significantly influenced only cloze task

Figure 7
PATH ANALYSIS OF THIRD GRADE CLOZE

(a) Full Model


GROUP
TEST
CLOZE1
CLOZE2
.53***
(.14)
(.00)
.39***
.46***
.49***

(b) Reduced Model

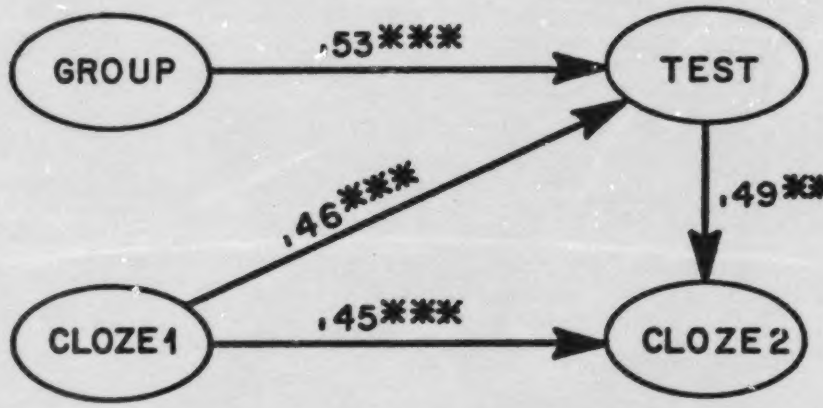
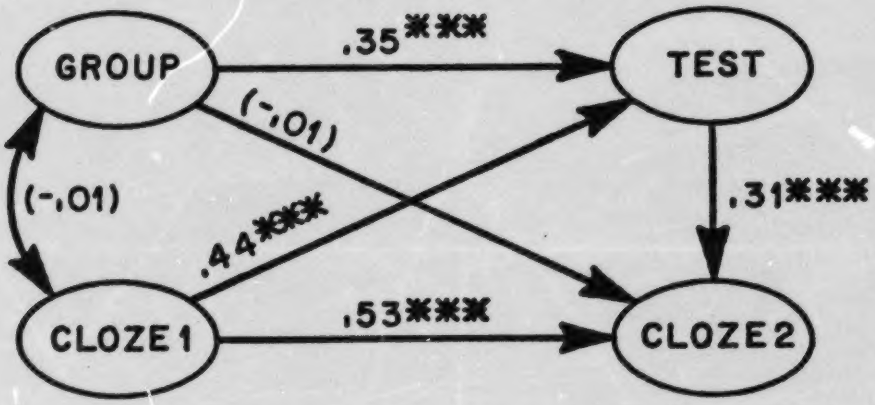
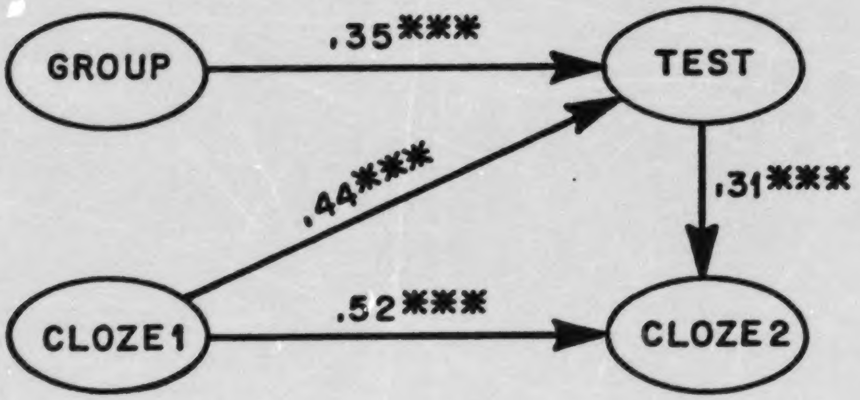

GROUP
TEST
CLOZE1
CLOZE2
.53***
.46***
.49***
.45***

Figure 8
PATH ANALYSIS OF FIFTH GRADE CLOZE

(a) Full Model


GROUP
.35***
TEST
(-.01)
(-.01)
.31***
.44***
.53***
CLOZE1
CLOZE2

(b) Reduced Model


GROUP
.35***
TEST
.44***
.31***
.52***
CLOZE1
CLOZE2

performance of fifth graders. It is not clear whether younger children in general benefit more from metacognitive information or whether idiosyncratic characteristics of the classrooms limited the effectiveness of the training in fifth grade. The impact of training was greatest on cloze passages and it is possible that these tasks required more problem-solving strategies from readers than the traditional text-question formats of the GATES and TORC.

Path analyses were used to gauge the direct and indirect effects of training on children's reading comprehension. They revealed that children's learning of the information in ISL, as measured by TEST, mediated the effects of intervention. This suggests that (a) the degree of learning above and beyond simple membership in the experimental groups contributed to the degree of reading improvement and (b) ISL improved children's knowledge about reading and their actual reading skills rather than providing a diffused motivational boost that directly influenced comprehension scores.

This study is, to our knowledge, the first experimental demonstration that metacognitive training about reading can actually promote better reading comprehension. Previous studies have shown that young, beginning, and poor readers often have limited metacognitions about reading and that reading proficiency is correlated with both better use and knowledge of comprehension strategies (Baker & Brown, in press; Garner, 1982; Moore, 1982; Ryan, 1981). In this project, children's reading awareness was enhanced significantly (cf. Jacobs & Paris, 1983) by the ISL instruction which helped to promote better reading skills. Thus, the study substantiates the importance of children's declarative, procedural, and conditional knowledge about reading for their development of better comprehension skills. This has powerful implications for reading theories and instruction.

In a theoretical vein, the data support models of reading that include "top down" processes (Adams, 1980; Carr, 1981) and show that young readers can profit from a conceptual understanding of dimensions of reading tasks and strategies. We regard the data from this experimental study as strong evidence for the role of metacognition in children's reading that has been hypothesized but not demonstrated heretofore (Brown, 1980; Myers & Paris, 1978). However, it should be noted that ISL was not simply a program designed to tell children more about reading; it was more than a litany of declarative and procedural knowledge required to become expert readers. We believe that the focus on conditional knowledge was a unique and critical component of ISL because children were persuaded to use reading strategies. Children learned the reasons for using different strategies and gained an appreciation of the effort required and potential benefits of them. They also realized the negative consequences of not evaluating, planning, and regulating their own reading. Situational appropriateness and utility are key dimensions of strategies that children need to understand in order to become self-directed, flexible learners. That is why we refer to our instruction as "informed"; children learn to appreciate strategies and are motivated to use them. The welding of motivation and knowledge through understanding and practice makes the learning strategies functional and personally significant so that continued learning and motivation can occur (Paris & Cross, 1983).

On a practical level, ISL is a flexible, economical program that can be used as an adjunctive reading curriculum in elementary grades. Although we created it for use in grades 3-5, the comprehension skills can be extended to younger and older children with appropriate modifications in the worksheets and materials. The critical features of ISL are the method of whole group instruction and the concrete metaphors for cognitive skills. Class participation is essential because it "makes thinking public." In other words, teachers and students share their views of texts, levels of meaning, strategies, problems, and their attitudes about reading. Children can then see how their views match their peers. Misconceptions can be resolved by listening to other children or by explicit correction by teachers. In our observations, children were eager to talk about their ideas and attitudes. In fact, the children who had difficulty in conventional reading groups were often the most vocal participants. Teachers were often surprised by students' comments, sometimes by their depth of understanding and sometimes by their naivite. The public discussions about reading and reasoning thus helped children to compare their ideas to those of their classmates and helped teachers to appreciate their students' viewpoints and problems. The persuasive, cooperative atmosphere facilitated both learning and teaching.

The importance of the bulletin boards and metaphors should not be overlooked. Teachers and children used the metaphors as vehicles for discussing abstract skills such as setting goals, monitoring comprehension, and identifying main ideas. The metaphors were repeated on the worksheets and were reviewed periodically in subsequent lessons so that they provided good memory cues. Some students invented additional analogies to characterize reading and ISL may have helped indirectly to foster analogical reasoning.

Our approach emanated from research on children's memory, reading, and metacognition but it shares smiliar features with other prescriptions for reading instruction. Tierney and Cunningham (in press), for example, suggest that teachers can stimulate children's reading with many activities before, during, and after reading (which is similar in many ways to the framework shown in Figure 1). They suggest two types of prereading activities. First, teachers can use analogies and teach vocabulary words to activate children's knowledge of the topic.

This is similar to Langer's (1982) PREP program. Second, teachers can help children relate prior knowledge to the text with advance organizers, statements of objectives, pretests and prequestions, and student-generated purposes. Teachers can help readers by prompting them to use imagery, by asking questions intermittently, and by providing study guides. Following the reading task, teachers can ask questions, provide feedback, and stimulate group discussions. Many of these methods were used in ISL and the rich variety of instructional activities illustrates how teachers can help to motivate and inform children's comprehension skills.

The instructional features of ISL can be extended to many other grade levels and content areas. Group discussions, concrete analogies, and informed strategies could be especially helpful in mathematics and science curricula. Metacognition and shared knowledge are important for the classroom dynamics of learning and teaching. Future research should elaborate metacognitive instruction for other subject areas in formats that can be used easily by classroom teachers. Researchers should also try to identify how attitudes and motivation influence children's use of comprehension strategies so that we can acquire more precise information about methods that sustain student motivation. Instruction that combines knowledge about problem-solving strategies and positive motivation can make teaching and learning functional, rational, and enjoyable.

Footnotes

[1] We gratefully acknowledge the support of the National Institute of Education (Grant # NIE-G-80-0148) and the cooperation of teachers and children in the Ann Arbor Public Schools in this research endeavor. Janis Jacobs, Evelyn Oka, and Ann Marie DeBritto helped to collect and analyze data and their participation throughout the larger project has been extremely valuable.

[2] We would like to acknowledge Dave Cross' expertise and diligence in devising the path analyses for this project.

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Metacognition and Reading Comprehension

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COMPREHENSION SKILL TRAINING MODULES

A. Awareness of Reading Goals, Plans, and Strategies

1. Purposes and Skills in Reading
   "Reading is Like a Puzzle"

2. Comprehension Strategies
   "A Bag Full of Tricks for Reading"

3. Task Evaluation
   "Be a Reading Detective"

4. Forming Plans
   "Plan Your Reading Trip"

B. Comprehension and Meaning

5. Reading Goals and Kinds of Meaning
   "What's in the Meaning?"

6. Abstracting Critical Information
   "Tracking Down the Main Idea"

7. Ambiguity and Inference
   "Infer the Hidden Meaning"

8. Summarizing Main Points
   "Round Up Your Ideas"

C. Evaluating and Regulating Reading

9. Critical Evaluation
   "Judge Your Reading"

10. Comprehension Monitoring
    "The Road to Reading Disaster"

11. Resolving Comprehension Failures
    "Road Repairs"

12. Speed Versus Accuracy
    "Skimming Along"

13. Abstracting and Highlighting Information from Text
    "Focus and Develop the Big Picture"

14. Final Review

Module #1

Topic: PURPOSES AND SKILLS IN READING   Metaphor: "READING IS LIKE A PUZZLE"

Introduction

The focus of this module is a general overview of reading as "meaning construction." The goals of reading will be discussed, such as understanding, evaluating, and remembering the information. "Word calling" or correct pronunciation will be contrasted with "getting the meaning." Solving the puzzle and understanding what you read requires plans and strategies. We shall emphasize activities such as:

1. thinking about what you are reading and why,
2. pausing while you read to check on understanding,
3. thinking about the material when you finish reading.

The end results of reading should be twofold; a new idea and pride in understanding. Comprehension as a reading goal, strategies as reading aids, and a positive sense of accomplishment will all be emphasized.

Rationale

Many studies have suggested that beginning and poor readers often focus all of their attention on decoding as the goal of reading. They don't seem to expect or care if the information makes sense and are often unaware of the need to plan, pause, reflect, or evaluate their own reading behavior. This initial module will try to stimulate students to consider the goals of reading and how comprehension can be facilitated through plans and strategies. Later, we shall teach specific reading skills, but initially we want students to begin asking themselves questions such as, "What am I reading?" "Why am I reading this?" "Do I understand the information?" "Can I pause and use plans to read this?" "Did I feel good that I read and understood the material?"

Objectives

Conceptually, we are trying to teach children to evaluate the task, plan their reading, and monitor their understanding.

1. To teach "meaning-getting" as a goal of reading.
2. To inform students that plans and strategies can help comprehension.
3. To teach students to "watch themselves" as they read to insure they pause, check their understanding, and monitor meaning as they read.
4. To feel good after reading and understanding the message.

Instructional Techniques

Throughout reading instruction (both individualized and group situations), the teacher can stimulate children to consider the what, how, and why of reading. Some examples follow, but feel free to add your own activities.

1. Before children begin to read, ask them about the subject, title, or topic of the reading. Ask them to guess what the story could be about and what they already know about the topic.
2. After a child reads a sentence or part of a story, ask him if he understands what it means and how it fits into the story. Provide opportunities for students to pause and think during reading.
3. When the child finishes reading, ask him what new idea he learned. Ask if the story was different than he thought it would be.
4. When a child finishes reading, ask if he did anything special to try to figure out the meaning of words and the story. Emphasize the goals and plans that could be used.
5. Praise the child for comprehending the meaning and resolving difficult words and sentences. Make sure the child feels proud of comprehension as the result of reading.

Connections to Bulletin Board Display

The bulletin board includes three statements that can be used during any reading instruction. The teacher can use these directly and should encourage the children to use them independently. Statements this week are:

1. Think about what you're reading and why.
2. Stop while you're reading to see if you understand.
3. Think about the meaning when you've finished.

In addition, the bulletin board has each student's name and day of the week so that children can check each day to show that they have used these statements to guide their reading. It is hoped that the emphasis on reading skills from Marge, the teacher, and bulletin board displays will make these statements salient for the children and allow repeated opportunities for self-testing and involvement.

Module 1: Lesson 1

"READING IS LIKE A PUZZLE"

Goal

Children will be able to recall that the main goal of reading is to construct meaning. They should have a new idea when they are finished.

Bulletin Board Statements

1. Think about what you're reading and why.
2. Stop while you're reading to see if you understand.
3. Think about the meaning when you're finished.

Procedures

1. "For the past few weeks (in the pre-test phase of this program), we have been talking with you about reading, asking you to read, and asking you questions about reading."
2. "Starting today, I'm going to come into this classroom two times a week to work with you on reading things. Sometimes I'll leave games, and sometimes we'll just talk and think about reading. I hope that you will be very good readers when we are all done."
3. "Every week there will be a new bulletin board for you to think about. This week's board is called, 'Reading is Like a Puzzle'. Can you tell me what you think that means? How is reading like a puzzle?" (Children's responses range from "You have to figure out new words," to "Sometimes when I'm all done reading, I still don't know what it means.")
4. "Yes, those are all good ideas about reading. It's especially important to get the MEANING;to understand what the author was trying to tell you. But, that's not always easy. Reading is like a puzzle."
5. (Use the bulletin board to illustrate the next part). "This is a special kind of puzzle called a maze. Reading is like solving a maze puzzle."
   a. "First you have to Think About What You're Reading and Why."
   b. "Then, as you're going along (reading), you have to stop every now and then to see if you're going in the right direction. (Are you Getting Closer to the Meaning?)"

c. "Sometimes you come to a 'dead-end' (that is, a word you don't understand). Then you have to stop and figure it out before you can keep going."

d. "When you get to the end, you should have the MEANING, and you should feel good"(refer to the bulletin board figure).

"You have to stop at the end and ask yourself: Do I Understand What I've Read? and How Do I Feel? You should feel proud that you solved the puzzle."

6. Demonstrate the above steps with stories: (see p. 1:7 and 1:8):

When Dinosaurs Lived on Earth (third grade)*
Bongos in Africa (fifth grade)**

These stories are written on large chart paper. The children take turns reading and are guided through the story with the focal statements from the bulletin board and references to the maze analogy.

7. When children are done reading the story, draw a large light bulb on the board. Inside the bulb, write the meaning of the story as it is elicited from the children. When they are done, "light-up" the bulb by drawing -''- around the bulb to indicate that they constructed the meaning and solved the reading puzzle.

8. Summarize with the children:

a. What is the goal of reading?

b. What statements will you think about this week?

Be sure the children know that they are to check their names on the bulletin board.

Materials

When Dinosaurs Lived on Earth

Bangos in Africa

Module 1: Lesson 2

"READING IS LIKE A PUZZLE"

Goal

Children will be able to read a group story and use the focal questions to guide their reading.

Bulletin Board Statements

1. Think about what you're reading and why.
2. Stop while you read and see if you understand.
3. Think about the meaning when you're finished.

Procedures

1. Check with the children to see whether they checked their names on the chart.
2. Review Monday's lesson, "Reading is Like a Puzzle".
3. "Today I want to see if you can tell me the steps in solving the reading puzzle."
4. "I have another story that we will read together. I want you to tell me the steps you are taking to get to the MEANING."

   Together, read the chart story: (see p. 1:9 and 1:10):

   The People of New Guinea (third grade)*
   Coral (fifth grade)**

5. Guide the children, where necessary, to read the passages using the focal statements from the bulletin board.
6. Again, put a 💡 on the board and write the meaning message.
7. Have children complete the worksheet with the maze and the coded message: "You are on the road to good reading" (p. 1:11).
8. Summarize the lesson and remind children to check their names.

Materials

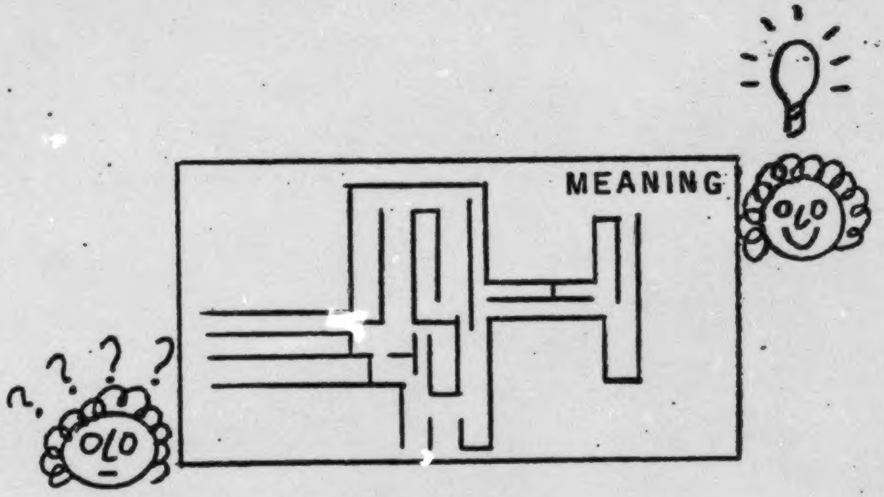
The People of New Guinea by M. Y. Lipson. In *Third grade readers' use of prior knowledge in inferential comprehension.* Unpublished doctoral dissertation, University of Michigan, 1981.

Coral. McGraw, Inc.; 1977, 1970.

MODULE 1

BULLETIN BOARD

READING IS LIKE A PUZZLE



DON'T FORGET

✓ THINKING ABOUT WHAT YOU'RE READING AND WHY

✓ STOPPING WHILE YOU READ TO CHECK ON UNDERSTANDING

✓ THINKING ABOUT WHAT YOU'VE READ WHEN YOU FINISH READING

NAME	M	T	W	T	F

When Dinosaurs Lived on the Earth ∵

The earth was different a long time ago. It was warm all the time. More land was under water. There were many swamps, lakes and plants.

There were many different kinds of dinosaurs. Some dinosaurs even had wings. Some dinosaurs were only as large as chickens. ∵ Some were as large as horses and some were giants. Some dinosaurs ate plants and some ate meat. The meat-eating dinosaurs often ate the plant-eating dinosaurs. The meat-eating dinosaurs had sharp teeth and big jaws. But the plant-eating dinosaurs had sharp horns and hard bones covering their bodies. This made it hard for the meat-eating dinosaurs to kill them. ∵

The giant dinosaurs were mostly plant eaters and they lived in the swamps. ∵ The winged dinosaurs lived in many places.

No man ever saw a dinosaur. The dinosaurs died long before people came on the earth. No one knows for sure why the dinosaurs died. Maybe it was because the earth got cold or maybe there was not enough food for dinosaurs. ∵

∵ At these places, the teacher should stop and ask the children if they understand what they have just read.

Bongos in Africa ∵

Someday, if you are lucky, you may see a bongo. But the only way most people will see one is in a zoo. Bongos belong to the antelope family. They are found in Africa, where they live deep in the forests. Even in Africa, very few people ever get to see a bongo. The bongo does not come out of the forest very often. ∵

Even in the forest it is hard to see a bongo. Its reddish brown hair matches the red earth of the forest. It has yellow-while stripes down its sides which look like the streaks of light in a forest. ∵

Animals that hunt at night usually have big eyes. This helps them see better at night. The forests in which the bongos live are very dark. The eyes of the bongos are very big. The bongo has adapted its way of living to the darkness. ∵

Bongos in zoos do not like to go outside on bright days. They only go outside on those days when it is dark or cloudy. ∵

∵ At these places, the teacher should stop and ask the children if they understand what they have just read.

The People of New Guinea

New Guinea is a large island in the Pacific Ocean. New Guinea people live in tribes. Each tribe is very different but all of them decorate their bodies. It is important to the people to do this. In some tribes there are people called "mud men". They cover themselves with river mud and put on masks made of mud. In other tribes there are "wig men" who wear big headdresses made of human hair.

Many people in New Guinea still live as people did a thousand years ago. They still use sticks to plant their corn and other crops. They grow most of their own food and make the things they need.

Once a year tribes from all over the island come together for a big fair. This fair is called a sing-sing. People bring their best animals and farm crops to show to judges. The judges decide which are the winners.

Then there is dancing and singing. The dancers and singers paint their faces. They wear fur on their ears and headdresses with bright feathers.

Coral

Coral looks like a kind of rock. But it is not rock. Coral is made up of the skeletons of many ocean animals that have died. Coral animals are shaped like tubes. One end of the tube is the mouth. The other end attaches itself to something hard. These animals attach themselves to each other to form colonies.

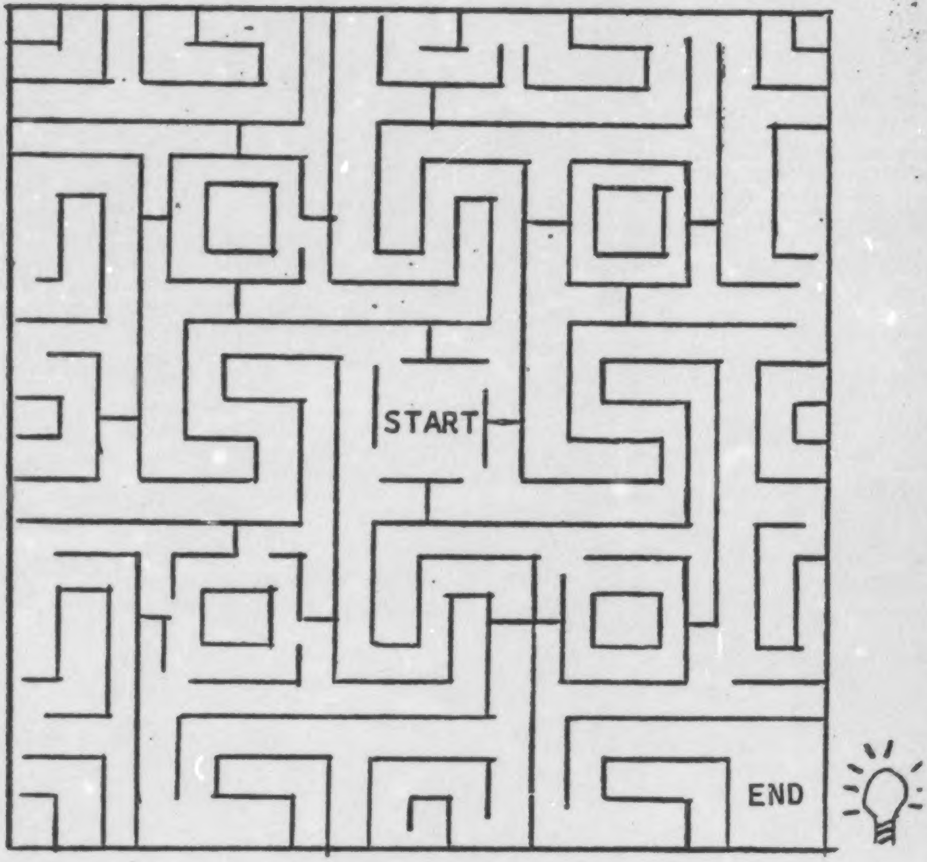
In Italy many men make their living from coral. Some of these men are fishermen. Others make rings and other fine jewelry to sell.

Most coral is red, pink or white. To get it, fishermen pull nets along the bottom of the ocean. The best kinds of coral are sold to be used as jewelry. Another kind is used to build roads. This kind is mixed with sea water to make concrete.

Some kinds of coral take a long time to build up in the sea. So, where these corals grow, men can fish for coral only once every ten years.

1:11
Module 1: Lesson 2
Worksheet 1

① CAN YOU SOLVE THE PUZZLE?



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② BREAK THE CODE

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

25 15 21   1 18 5   15 14   20 8 5

18 15 1 4   20 15   7 15 15 4

18 5 1 4 9 14 7

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③ WRITE YOUR OWN MESSAGE

Module #2

Topic: COMPREHENSION STRATEGIES Metaphor: "A BAG FULL OF TRICKS FOR READING"

Introduction

In this lesson we want to teach children that there are many strategies (or tricks) that can be used as reading aids. The strategies focus on comprehension and knowing that you understand what you read. The lesson builds on module #1 by making children aware of resources that will help them reach the goal of comprehension (that is, solving the puzzle, getting ideas, and feeling good).

Rationale

Research has shown that young and poor readers focus on decoding print to sounds and rarely check their understanding strategically (Ryan, in press). Children often "read" meaningless words and sentences without realizing that the message doesn't make sense. Children generally do not pause while reading to elaborate or think about the message. Although they can use strategies when prompted, they usually fail to generate the strategies spontaneously. This lesson will teach them about the existence of comprehension strategies and the need to use them.

Objectives

1. To teach children that there are many strategies that can aid reading comprehension.
2. To teach children to use different strategies.
3. To teach children to generate reading strategies during and after reading on their own.

Instructional Techniques

Throughout the week we would like teachers to stimulate children to pause while reading, produce a strategy, and use it to elaborate and check on meaning. Several possible teacher prompts are listed below.

1. Before children begin to read (individually or in a group), ask them what they could do to help them understand. "What kind of plan will you pick from your reading bag of tricks?"
2. As children pause or complete their reading, ask them specific questions about using strategies such as:
    a. Did you try to imagine the story like a picture?
    b. Did you think how this story is like something you've done before?

  c. Did you think about the main ideas?

  d. How did the characters feel?

  e. Why did the story end the way it did?

  f. Did you ask yourself questions about the story?

  g. Can you tell what you learned to somebody else?

  h. Did you go back and read parts of the story again?

3. After children read a passage, have them write the "tricks" they used at the bottom of the page.

4. Have children keep a record of the tricks they use on a separate piece of paper and see how many different tricks children use each day or week.

5. Put slips of paper with reading strategies (e.g., make a picture in your head) into a reading bag of tricks and ask children to pick one and use it. This could be done in conjunction with the bulletin board display.

Connections to Bulletin Board Display

You can use the bulletin board magician and his bag of tricks as a place to send children to get reading strategies. The idea of a "Bag of Tricks" can also serve as an easy cue to direct children to generate their own strategies throughout the day. They can question themselves by asking:

1. Did I ask myself questions while I was reading?

2. Did I look back in the story to check what happened and why?

3. Can I say the meaning in my own words or tell it to someone else?

The three main statements on the bulletin board can also serve as a focus and reminder. Feel free to add your own special strategies for decoding and memory too. We hope the notion of a "reading bag of tricks" will make children more aware that they can do things while they read that help them understand better. Later, we shall teach children many more specific strategies.

Materials

Ryan, E. B. Identifying and remediating failures in reading comprehension: Toward an instructional approach for poor comprehenders. In T. G. Waller & G. E. MacKinnon (Eds.), Advances in reading research. New York: Academic Press, in press.

Module 2: Lesson 1

"A BAG FULL OF TRICKS FOR READING"

Goal

Children will be able to name at least two tricks (strategies) for getting meaning.

Focal Strategies (Tricks)

1. Did I ask myself questions? (This is an extension of last week's prompt to "Think about what you're reading and why.")
2. Did I (or can I) say the meaning in my own words: what does it mean to me? (This is an extension of week 1: "Stop while you're reading to check on meaning.")
3. Does this meaning make sense?
4. Did I look back and check (reread). (Strategies 3 & 4 are extensions of week 1: "Think about what you've read when you finish reading.

Other Tricks:

1. Figure out words that you don't know.
2. Tell the story to yourself or to someone else: can you remember it? Does it make sense?
3. Connect one idea with another.
4. Get help when you need it.
5. Get the main idea.

Procedures

1. Go over the children's checklist from last week. Take it down and praise the children for their effort.
2. "This week's bulletin board is called, 'A Bag Full of Tricks for Reading'."

   "Can you tell me what you think that means? What do you think we will be talking about this week?" (Probable response: "tricks for reading.")
3. "Do you know any tricks for getting the meaning? What do you do to help you understand a story?"

   Generate "tricks," as many as possible, and record on the blackboard.

4. Ask children to explain their "trick," (if they can).

5. "Well, I have a bag of tricks for reading right here. Some of your tricks are in this bag, and there are some others as well."

6. Child picks trick (one of the three focal ones) and helps demonstrate it with the following sentences and/or titles:

   a. Ask yourself questions (who, what, where, when, and how):

      For third grade:
      Sam, Bangs, and Moonshine
      If I Ran the Zoo
      The Terrible Thing that Happened at Our House
      Ira Sleeps Over

      For fifth grade:
      The House of Sixty Fathers
      Mrs. Frisby and the House of NIMH
      Island of the Blue Dolphin
      The Headless Cupid

   b. Say the meaning in your own words:

      The grass is greener on the other side of the fence.
      Raining cats and dogs.
      Don't count your chickens before they're hatched.
      Necessity is the mother of invention.

   c. Get a mental picture.

      Use the sentences above.

      An additional source is:
      Chocolate Mouse for Dinner

7. Summarize: "Good reading is NOT magic, but there are some tricks you can use to help you. Try these tricks this week."

   "On Wednesday, I'm going to have you choose tricks and show me that you know how to use them."

Module 2: Lesson 2

"A BAG FULL OF TRICKS FOR READING"

Goal

Children will be able to demonstrate at least one of the tricks generated on Monday.

Focal Strategies (Tricks)

1. Review the three from Monday:
    - a. Did I ask myself questions?
    - b. Did I say the meaning in my own words?
    - c. Did I look back and check (reread)?
2. New Strategies:
    - a. Did I figure out the words I didn't know?
    - b. Did I imagine the story like a movie in my mind?
    - c. Did I tell the story to myself or to someone else?

Procedures

1. Go over the children's checklist and comment.
2. "You were going to practice several tricks this week. Who can remember what they were?" (Review with the children)
3. If the additional tricks above do not come out of the discussion, introduce them and discuss their merit.
4. "Today you are all going to get to pick a trick from the bag." "Also, I have a story which I will pass out." (See p. 2:7 and 2:8.)
5. "What do you suppose you are going to do? Yes, you will use your trick to help you read the story. Be sure you use your trick because the rest of the class will be depending on you."
6. Children read the story, using their questions to help them.
7. Have children demonstrate their trick with regard to the story.
8. Summarize: "There is no magic in reading for meaning, but there are tricks. Remember to use these tricks this week and check off your name."

MODULE 2

BULLETIN BOARD

A BAG FULL OF TRICKS FOR READING

NAME	M	T	W	TH	F

DON'T FORGET

THINK ABOUT WHAT
YOU'RE READING AND WHY

STOP WHILE YOU READ TO
CHECK ON UNDERSTANDING

THINK ABOUT WHAT YOU'VE
READ WHEN YOU FINISH
READING

The Camel of the Plant World

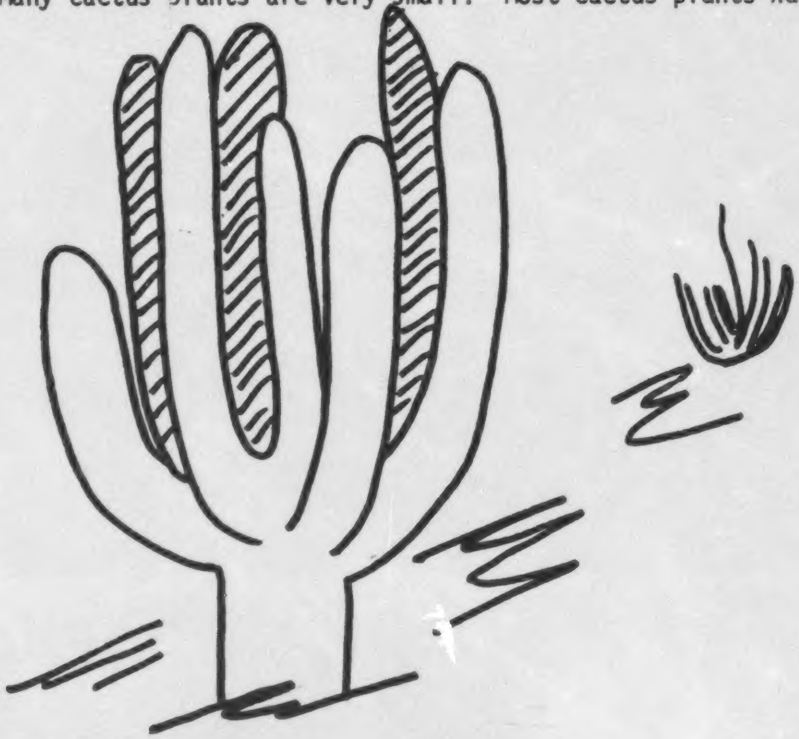
Cactus plants are camels of the plant world. They store water much as camels store water. If cactus plants could not do this, they could not live in dry deserts.

Little rain falls in a desert. Rains come months or years apart. When rain comes, the roots of the cactus plants take up water from the ground. This water is absorbed in the stems of the plants.

The stem of a cactus is thick. It acts like a sponge. It takes up and holds water for the plant. The outside covering of the stem is thick. It keeps the desert sun and the wind from drying up the water in the plant.

Cactus plants do not have leaves. Most cactus plants are covered with needles. These keep animals away from the plants.

There are hundreds of kinds of cactus plants. Some grow to be very big and very old. The giant cactus becomes a tree. It lives hundreds of years. Many cactus plants are very small. Most cactus plants have bright flowers.



7

Rip Van Winkles: Frog and Toad

A suitcase was checked in a railroad station in California. Nine months went by and no one came to claim the suitcase. Finally, it was opened. Inside, along with many other things, was found a small, tightly closed box. When the box was opened, out hopped a small toad: it had lived in the box inside the suitcase for nine long months. It had no water, food, or fresh air. Yet the toad was still alive and able to move.

While building a tunnel through a hill, a miner set off a stick of dynamite. After the explosion, he picked up two handfuls of thick, slimy mud which had been 75 feet under the hill. He left the pieces of earth by a stove. Imagine his surprise when, a few minutes later, six frogs wiggled out!

The miner took the frogs home, and after two days they began to hop, croak, and enjoy a meal of worms and flies.

We know that toads and frogs can breathe through their skin, but we do not know how long they can live without water, food and fresh air. Frogs and toads which have been buried for some time have been found still alive.

Module #3

Topic: TASK EVALUATION Metaphor: "BE A READING DETECTIVE"

Introduction

In this lesson, we want to teach children to analyze reading tasks. Before they begin to read they should evaluate how difficult the material is, how long it will take to read it, what kind of story or information is presented, and what they should know when they finish reading. Knowing about the reading task beforehand can help the child get ready and attack the passage planfully. Analyzing the purpose and structure of the task also can serve as a good cue for studying and remembering the information later.

Rationale

Many children simply begin to read passages without considering the task dimensions first. They assume that they will figure out the message and difficulty as they read. However, a frequent problem is that children get bored or confused or forget why they are reading, and stop reading in the middle of a passage. Other common problems are that children do not allow enough time to read the whole passage, they choose material that is too difficult to read; or they do not know why they are reading a certain passage. A consequence of this lack of foresight is that children may simply close the book when they finish reading, without evaluating their own performance. A careful analysis of the task and themselves may help children understand what and why they are reading so that they feel good about reaching their comprehension goal.

Objectives

1. To teach children to declare a reading goal.
2. To promote awareness of what the passage is about before they begin reading it.
3. To stimulate children to evaluate the difficulty of the passage.
4. To begin to promote awareness of the different demands of different content.

Instructional Techniques

Since children often read aloud in groups or silently at their desks without reminders to think before they read, it is necessary to call children's attention to "getting ready" to read.

Here are several suggestions for questions to children:

1. Ask children what kind of reading they are doing - science, history, fiction, etc. Is it real or make-believe? Is it full of facts to remember?
2. Is the passage difficult? What kind of book did it come from? Have children look at some of the words in the middle of the passage to make sure they know most of them.
3. Have children tell you why they are reading a passage - for fun, to remember, to learn, etc. Before they begin to read, ask them what they think they will know when they finish.

Connections to Bulletin Board Display

The bulletin board will include a picture of a detective with a magnifying glass to illustrate close inspection and analysis. The three questions will be:

1. What kind of reading is this?
2. Why am I reading?
3. Is it easy or hard to read?

The aims of the questions and Marge's lessons are to sensitize children to the content and purpose of the material. It is a subtle idea to teach but declaring a reading goal is a crucial first step in reading comprehension.

Follow-up

Because of the Thanksgiving holiday, there will be only one lesson by Marge on this module before Thanksgiving. In the following week we shall keep the same general bulletin board detective theme but add some new questions and teaching objectives. The new objectives are to teach children:

1. To analyze the length and structure of the passage, i.e., how many pages, paragraphs, etc.
2. To use text structure and difficulty as a clue to how to get ready to read.
3. To prepare to read - i.e., allow enough time, find a quiet place, think about the goal, etc.
4. To understand why the passage was easy or hard to read.
5. To evaluate how well they read and understood the information.

Module 3: Lesson 1

"BE A READING DETECTIVE"

Goal

Children will be able to ask themselves three questions that involve analyzing the task before reading.

Bulletin Board Questions

1. What kind of reading is this? (different content)
2. Why am I reading this? (different goals)
3. Is it easy or hard to read?

Procedures

1. Go over the children's chart and comment.
2. "This week our board is called, 'Be a Reading Detective'. What does a detective do?" (Try to generate: gets clues, tries to figure out what is going on.)
3. "Yes, a detective gets some ideas about what is going on before he tries to solve the puzzle. To be a reading detective you have to figure out many things. Many of you told me at the beginning of the project that you could not tell how hard or easy something was to read. A detective does not jump in before he/she has looked at the clues. You shouldn't either."
4. "Some things you could do to be a detective (before you read) are on our board this week (bulletin board)."
   a. Why am I reading this? What do I have to do afterwards?
      - Draw a picture?
      - Answer questions?
      - Write a report?
      - Just enjoy it?

   b. What kind of reading is this?

      Use notecards with different sorts of reading OR chart with samples. See attached worksheets pp. 3:19-3:20.

   c. How difficult is this? How do you know?
      - Answers to the first two bulletin board questions will help.
      - Are there any or many hard words?
      - How much do you know about this already?

Module 3: Lesson 2

"BE A READING DETECTIVE"

Goal

Children will be able to ask themselves three questions that involve analyzing the task before reading. They will use the "clues" from the text to answer the questions.

Additional Bulletin Board Questions

1. How long is this (in pages, paragraphs)?
2. How long will this take me to read (in terms of length and difficulty)?
3. Do I have enough time?

Procedures

1. Review the content from Lesson 1.
    a. What does a detective do?
    b. What does she/he use to help?
    c. What three questions can you ask to give you clues?
2. "Today we will ask three more questions that will help you to be a reading detective." Have children read the questions from the bulletin board.
3. Ask children to generate ideas as to how they can tell how long the reading task is and how much time it will take. Mention that many of them thought there was no way to tell how long something would take when they did the pre-test.
4. "Today we are going to practice using all three clues to answer the questions. We will do this together."
    a. Place a reading passage on the over-head projector. (See pp. 3:9-3:14.)
    b. Pass out the worksheets (see p. 3:21) with the empty magnifying glasses.
    c. Have the children analyze the task by asking and answering the bulletin board questions for the week. Ask them to tell you what clue(s) they used.

Example:
"Abba Meets the Crocodile" has several clues as to the kind of reading: title, picture and the opening sentence. Difficulty can also be determined in several ways: the paragraphs are short, the words are easy.

d. Record the children's responses (especially the clues they used) on the board and have them record them on the worksheet.

5. Continue with several readings in the above manner so that the children can contrast the different sorts of reading in terms of length, time and difficulty.

Materials

1. Abba Meets a Crocodile, by Eden Vale Stevens.
2. Pooh Builds a House
3. "The Family of the Sun," adapted from The Sun, The Moon, and the Stars, by Mae and Ira Freeman (New York: Random House, Inc.).
4. Some Theories About Light
5. Study of a State: Physical Geography/Concept: Territory
6. The Horse That Played the Outfield, by W. Heuman. In Joys & Journeys, Read Series. New York: American Book Co., 1968.

Module 3: Lesson 3

"BE A READING DECTECTIVE"

Goal

Children will be able to analyze the task in terms of a post-reading analysis involving asking and answering three focal questions.

Bulletin Board Questions

1. How good am I?
2. Did I go fast enough?
3. Did I get the meaning?

Procedures

1. Review lessons 1 and 2. Focus on the importance of using clues to get ready to read.
2. "Today we are going to figure out the answers to three more questions." Have children read the new questions.
3. "We are going to find out just how good you are today. We will find out how fast you can read and how well you got the meaning."
4. Timed reading exercise:
    a. Children receive booklet with cover, story, and questions.
    b. Explain the timing procedure to the children:
        (1) "As you read, I will be marking the time on the board."
        (2) Demonstrate how the time will be recorded in seconds and minutes.

:00	After you get to :50, return	1:00
:10	to the top and just add the	1:10
:20	minutes, that is:	1:20
:30		1:30
:40		1:40
:50		1:50

        (3) "As soon as you are done reading, look up on the board and see what the last time I have written is. Write it down in the blank that says 'time' at the bottom of your page."
        (4) "Then, turn the page and answer the questions, you cannot turn back to the story to help you answer them."

  c. Then, encourage children to discuss the focal questions for the week: e.g., Why am I reading this? (To see how fast I can go and to be able to answer the questions.)

  d. After children have considered the questions, tell them they will have 10 seconds to look at the reading to figure out how long it will take them (they ARE NOT to start reading, only use the clues to figure out the estimated time).

  e. Now, have children record the time they think it will take them on the cover of the booklet.

  f. When everyone is ready begin the activity.

5. When everyone has finished and answered the questions, go over the questions emphasizing that they must also figure out if they got the meaning before they know how good they are.

6. Convert time to words per minute (wpm). The wpm will be used to introduce the next lesson.

Materials

1. Safety Coats for Animals

2. Dust Bowl Turns Into a Breadbasket

MODULE 3

BULLETIN BOARD

BE A READING DETECTIVE

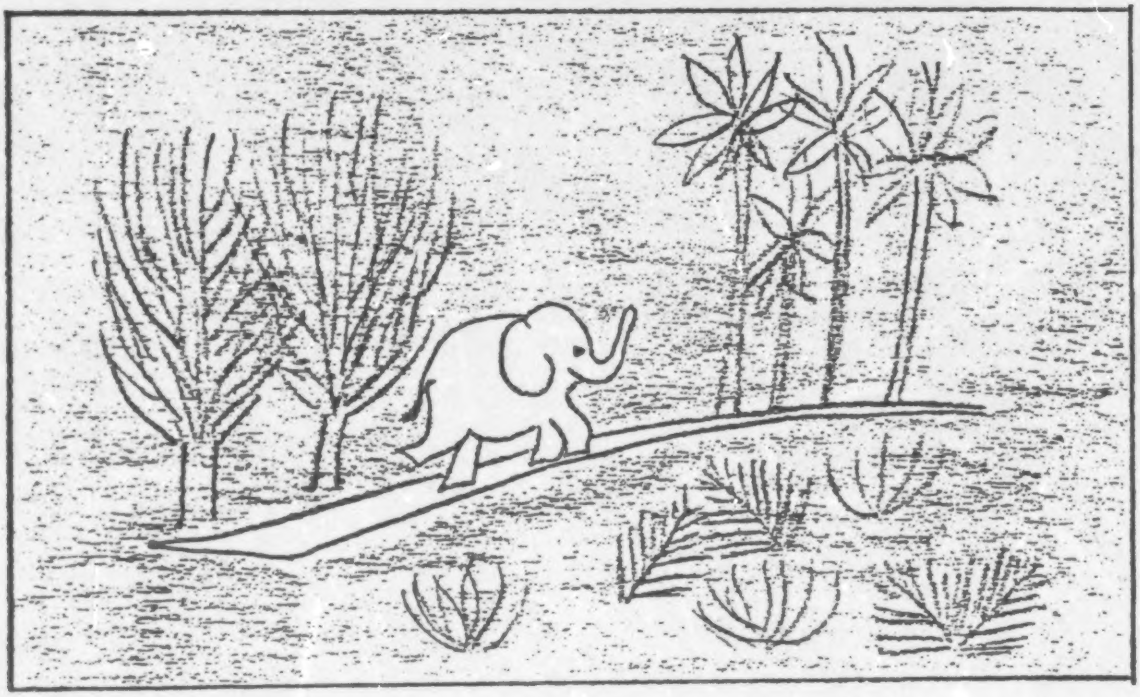
DON'T FORGET

WHY AM I READING THIS?

WHAT KIND OF READING IS THIS?

HOW HARD IS THIS TO READ?

NAME	M	T	W	TH	F



When a young elephant leaves home and strikes out across the African plain, naturally he has an adventure! Abba found his quite by accident.

ABBA MEETS A CROCODILE

by Eden Vale Stevens

When the morning star rose bright and clear above the spring, Abba was already awake.

"Follow the path to the right of the morning," he whispered.

He drank deeply of the cold water in the hollow stone. When he looked up, he saw, in the new light of the morning, the path leading away from the spring.

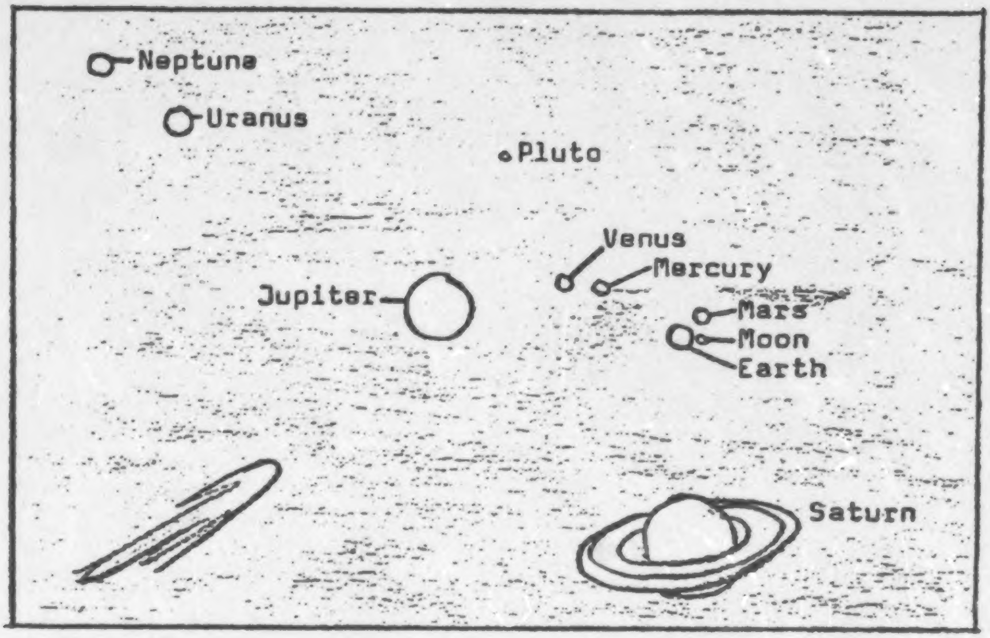
"Good-bye, Spring," he said.

POOH BUILDS A HOUSE

One day when Pooh Bear had nothing else to do, he thought he would do something, so he went round to Piglet's house to see what Piglet was doing. It was still snowing as he stumped over the white forest track, and he expected to find Piglet warming his toes in front of his fire, but to his surprise he saw that the door was open, and the more he looked inside the more Piglet wasn't there.

"He's out," said Pooh sadly. "That's what it is. He's not in. I shall have to go a fast Thinking Walk by myself. Bother!"

But first he thought that he would knock very louldly just to make quite sure ... and while he waited for Piglet not to answer, he jumped up and down to keep warm, and a hum came suddenly into his head, which seemed to him a Good Hum, such as he Hummed Hopefully to Others.

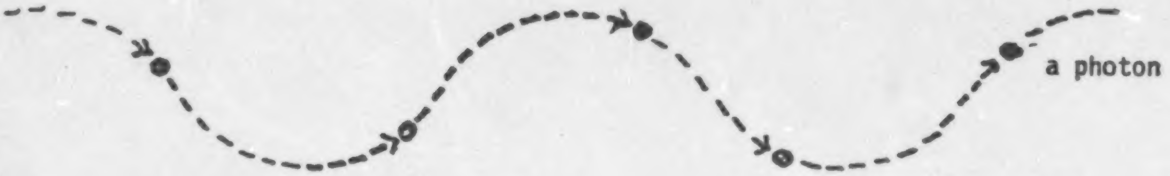

Neptune
Uranus
Pluto
Venus
Mercury
Jupiter
Mars
Moon
Earth
Saturn

THE FAMILY OF THE SUN

The earth belongs to a family. The head of the family is the sun. The family is called the solar system. The earth is a planet, and eight other planets are members of the solar system. Each one has a name: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto.

Look up at the sky some clear night. You will see many stars. Most of them look like tiny, twinkling dots, but on some nights you will fine one or two dots that seem bigger than others. They shine with a steady light and do not twinkle. These are planets.

SOME THEORIES ABOUT LIGHT



Light seems to be made up of tiny pieces of something. These pieces are not like small bits of paper or string. They seem to be different from atoms and electrons. Whatever these tiny pieces may be, physicists have given them a name. The name is photon.

No person has ever seen a single photon all alone. It is far too small. A photon is smaller than an atom or even an electron.

One theory is that a photon is something like a tiny, tiny bullet. This small particle is thought of as traveling in a wavelike path.

There is another theory about what a photon may be like. A photon may be thought of as a tiny bundle of energy.

This bundle is thought of as being in the shape of a very small wave. The small wave seems to travel in a larger wavelike path.

Scientists have been able to put the theories about photons together. Perhaps you can, too. You will be able to think of light as millions and millions of tiny, tiny photons.

Use the idea about how photons may travel also. Think of them as traveling in wavelike paths.

EXPERIMENT: To observe wave motion.

You will need a rope about 6 feet long. Ask a friend to hold one end of the rope steady so that it does not move. Now pull it almost tight.

Move your hand up and down in order to make waves of different sizes.

CONCEPT

TERRITORY

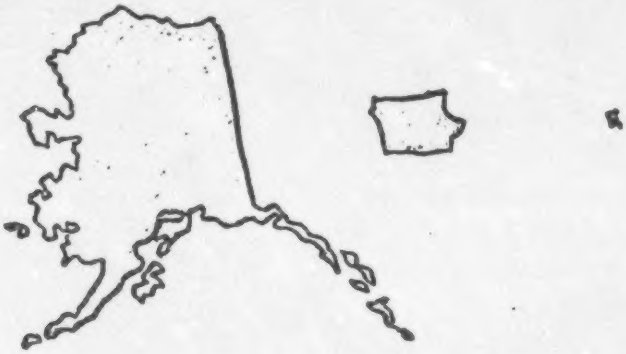
The territory of a state is the space a state takes up, or occupies on the earth's surface. The territory of a state is limited by its boundaries. Geographers can tell what is your state by looking at the size, the shape, and the boundaries of its territory on maps and globes.

Geographers can find out the exact size of your state. They can describe the size of your state by comparing it with the size of other states. They can tell about the shape of your state by comparing the east-west distance with the north-south distance across the state. They want to know what forms the boundaries of your state. It is very important to know where your state ends and the next begins.

Is your state big or small?

What is the shape of your state?

What forms the boundaries of your state?



STATES DIFFER IN SIZE

No two states of the 50 United States are exactly the same size. Alaska is the largest state. It ranks first in size. This means that all of the other 49 states are smaller than Alaska. Iowa ranks 25th in size. This means that 24 states are larger than Iowa and 25 states are smaller. Rhode Island ranks last in size. There are 49 states that are larger. You can find how your state ranks in size in the Physical Geography Facts at the back of this book.

Facts on pages 358-371

The states of Alaska, Iowa, and Rhode Island are outlined above. Compare the sizes of these states. Which one is Alaska? Name the other two states.

Alaska is the state on the left. Iowa is in the middle. Rhode Island is on the right.

Geographers use the scale of miles on a map to help them find the exact size of a state. When you have developed your skill at using a scale of miles on a map, you can tell more about the size of your state.

THE HORSE

THAT PLAYED THE OUTFIELD

Part One

If people have told you this story before, don't believe them. It's very likely that the facts have been juggled so much the story has turned into a tall tale. For instance, some people will tell you that this horse--whose name, by the way, was Edgar--could hit up to around .350 and that he was a terror on the bases.

That is just plain silly. A horse could never hit a baseball. As for running the bases, you can just imagine a second baseman waiting to tag out a horse coming from first.

3:19
Module 3: Lesson 1
Worksheet 1

BEING A READING DETECTIVE

CLUE	HOW WILL I READ?
1. The reading is about Winnie-the Pooh. I am reading this because I want to.	1.
2. The reading is in my science book. There are hard ideas and I'm not sure I understand them all.	2.
3. The reading is in my social studies book. There is going to be a test.	3.
4. The reading is a library book. I have to write a book report.	4.
5. The reading is in a comic book.	5.
6. The reading is in my reading book. It is a story with many new words. I have to answer questions about the story when I'm done.	6.

BEING A READING DETECTIVE

1. WHY AM I READING THIS?

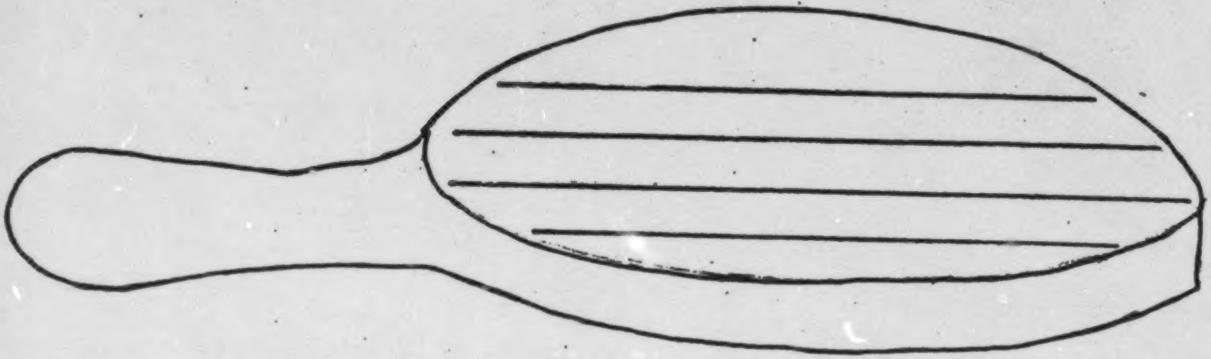
2. WHAT KIND OF READING IS THIS?

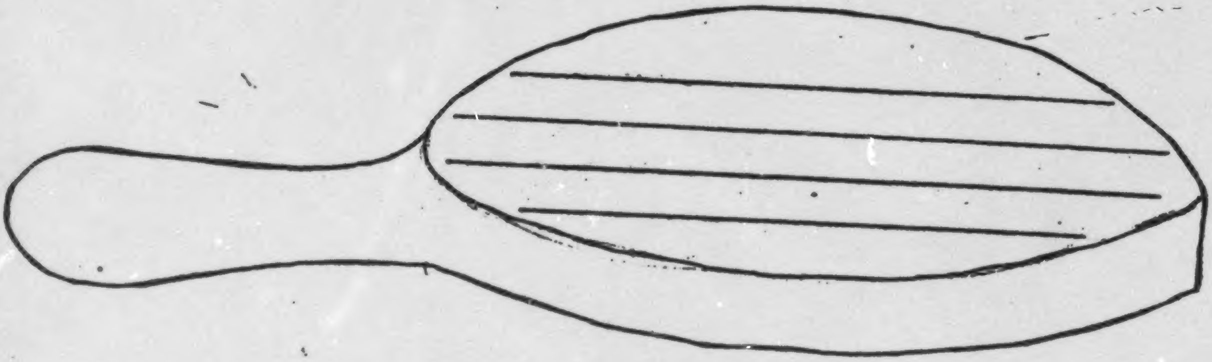
3. HOW HARD IS THIS TO READ?

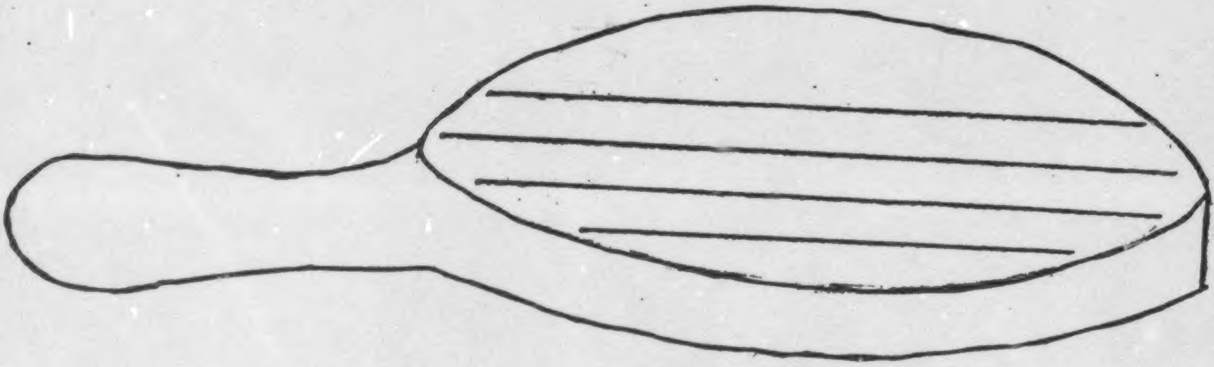
4. HOW DID I DECIDE HOW HARD THIS WAS TO READ?

3:21
Module 3: Lesson 2
Worksheet 1

BE A READING DETECTIVE







Module #4

Topic: FORMING PLANS Metaphor: "PLAN YOUR READING TRIP"

Introduction

In many ways reading is like taking an automobile trip. You need to know where you're going (the reading goal), and you need a map or plan on how to get there. We are going to use this analogy to teach children about monitoring comprehension while they read. Just like traveling, reading requires periodic checks on your progress and adjustments to keep on track. Occasional pauses to reread, summarize, or rephrase meaning insure continuous reading comprehension. Thus, we are going to tell children how to check and adjust their reading plans during reading. Since monitoring comprehension involves evaluations of the task (Module #3), purposes (Module #1), and reading strategies (bag of tricks) (Module #2), the lessons will also serve to integrate and review the previous modules.

Rationale

Children often begin to read without considering the type of information or the purpose in reading. They may not vary their reading speed or generate strategies along the way but simply decode words and hope that the information will make sense at the end. Some studies have shown that poor readers frequently skip words, "read" nonsense words, or substitute erroneous words while reading because they do not attend to the sentence meaning. Often they do not correct their own errors and seem oblivious to the lack of meaning. Even when children do read sentences correctly, they may not synthesize meanings within paragraphs or stories. If these children can be taught to check their own understanding periodically, it may improve their comprehension--especially if they also realize that strategies like rereading can get them back on track.

This week's lessons will use road signs and maps as cues for children's comprehension monitoring. You can add more analogies, but some of our signs and implications for reading are:

SIGN	READING DIRECTION
STOP	Say it in your own words.
QUIET ZONE	Get ready to read.
YIELD	Get help for words you don't understand.
DISTANCE	Are you getting closer to your goal?
SPEED LIMIT	Adjust your rate of reading.
DEAD END	Go back and reread.

Objectives

1. To teach children to stop and check their understanding during reading.
2. To teach children to keep their reading goals in mind.
3. To teach strategies for reading such as rate adjusting, rereading, figuring out unknown words, and paraphrasing.

Instructional Techniques

We hope that you can use the road maps and signs as teaching aids in many activities. They are particularly good devices when children's reading involves different purposes (such as reading for fun, to write a story, to answer questions, to get the general idea of a passage) or different kinds of subject matter that may require slow or fast reading, studying, paraphrasing, and so on.

1. When assigning a reading passage or introducing a task, ask children about their "maps." Encourage them to consider the task goal or reading objective. Ask them to read the title and think about the kind of information expected in the passage.
2. How long is the trip? Ask children to look at the length and difficulty of the passage. Do they have enough time to read it? Are they in a "quiet zone"?
3. Tell children about natural kinds of "stop signs" in prose. The end of sentences, paragraphs, and pages are good places to pause and say the meaning in the child's own words (and not just the end of the whole passage).
4. If the meaning is unclear, a child has reached a "dead end" and should go back and reread to figure out the meaning. Since many children do not think to go back over a passage, it is especially important to tell them that this is something that good readers do frequently.
5. As children read, you can introduce signs (like stop, yield, distance, speed) to make them observe their own progress. By asking them to pick a plan from their "bag of reading tricks," you can help them generate their own solutions to comprehension problems.
6. At the completion of reading, you can ask children if they reached the right destination (to insure that they had a goal and met it). If they can retell the information in the passage, they should feel proud for getting to their destination and can "turn on the lights" to signify that they learned some new ideas.

Connections to Bulletin Board Display

The bulletin board display is arranged like a trip with a child at one end of a road that leads to home. Along the way are numerous road signs (stop, yield, etc.). Underneath the child's road map and each sign are reading directions to follow. We hope that children will go to the bulletin board frequently and learn the directions for each sign. This metaphor is concrete and can be an easy reference to your daily reading instruction. Marge's lessons will include practice reading with "road signs" inserted into the prose so that children learn how to pause and adjust reading. The purpose of the whole module is to make children aware of the appropriateness and value of monitoring their comprehension by using these "stop and check" signs. The two major questions on the bulletin board are: "Do I have my reading map?" and "Did I obey the reading signs?"

Module 4: Lesson 1

"PLAN YOUR READING TRIP"

Goals

1. Children will use their "clues" to plan the reading trip.
2. Children will use their "bag of tricks" to get there.
3. Children will get to the goal--the meaning.

Bulletin Board Questions

1. Do I have my reading map? (Do I know what clues to attend to, what to do to get ready for a reading trip?)
2. Did I obey the reading signs? (Use the tricks to guide my reading?)

Procedures

1. Comment on last week's chart and pass out the timed reading papers from last week.
2. Say, "This week's bulletin board is called, 'Planning Your Reading Trip.'"
3. Reading is very much like taking a trip:
    a. You have to know where you are going. The goal is the meaning.
    b. You have to plan how you will get there.
    c. You have to check your progress as you go along to be sure you don't get lost.
    d. You have to obey the road signs along the way.
4. Use the bulletin board to illustrate the above examples.
    a. QUIET ZONE means you have to get ready for your trip. Generate from the children the things they do to get ready to read. Review the ideas of findings a quiet, comfortable place; reading the title; and using the detective clues.

b. The road signs are the signals that tell you to use your bag of tricks. Point out that the signs have messages under them that tell you what to do:

STOP. Stop and think.
DEAD-END. Go back and reread.
SPEED LIMIT. Adjust your speed to the reading task.
SLOW. The reading is difficult: go slow.
YIELD. Yield the meaning: look up words you don't know.

5. "In real reading, there are no real road signs. You have them in your mind and use them to guide your reading trip."

   Generate from the children the signs in their reading that tell them to stop and think or to pause (periods, commas, ends of paragraphs and chapters).

6. "Today we are going to take a reading trip and see if we can tell what to do when we come to each of the signs."

   "On Wednesday, you are going to take a reading trip on your own. You will have to provide the road signs, so listen and think carefully today."

7. Do worksheet (Worksheet 1 for 3rd grade and Worksheet 2 for 5th grade) and discuss each sign as you come to it. (See pp. 4:8 and 4:9.)

8. Summary: "So reading is like taking a trip. This week you should be doing these things as you read. Be sure that you obey the signs and think about your goal. Whenever you use the signs, check your name on the list on the bulletin board.

Module 4: Lesson 2

"PLAN YOUR READING TRIP"

Goals

1. Using a cued worksheet, children will be able to indicate the kind of "reading sign" they would use as they read the story.

2. Using this worksheet as a guide, children should be able to, on their own:

   a. use clues to plan their reading,

   b. monitor their reading as they go through the story,

   c. check on their understanding of the story.

Bulletin Board Questions

1. Do I have my reading map? (Do I know what clues to attend to, what to do to get ready for a reading trip?)

2. Did I obey the reading signs? (Use the tricks to guide my reading?)

Procedure

1. Quickly review the content of Monday's lesson.

2. Explain the worksheet (Worksheet 3 for 3rd grade and Worksheet 4 for 5th grade). (See pp. 4:10 and 4:12.)

3. Children will complete the worksheet by filling in the rectangles with the appropriate road sign and the commands that explain what they will do in their reading.

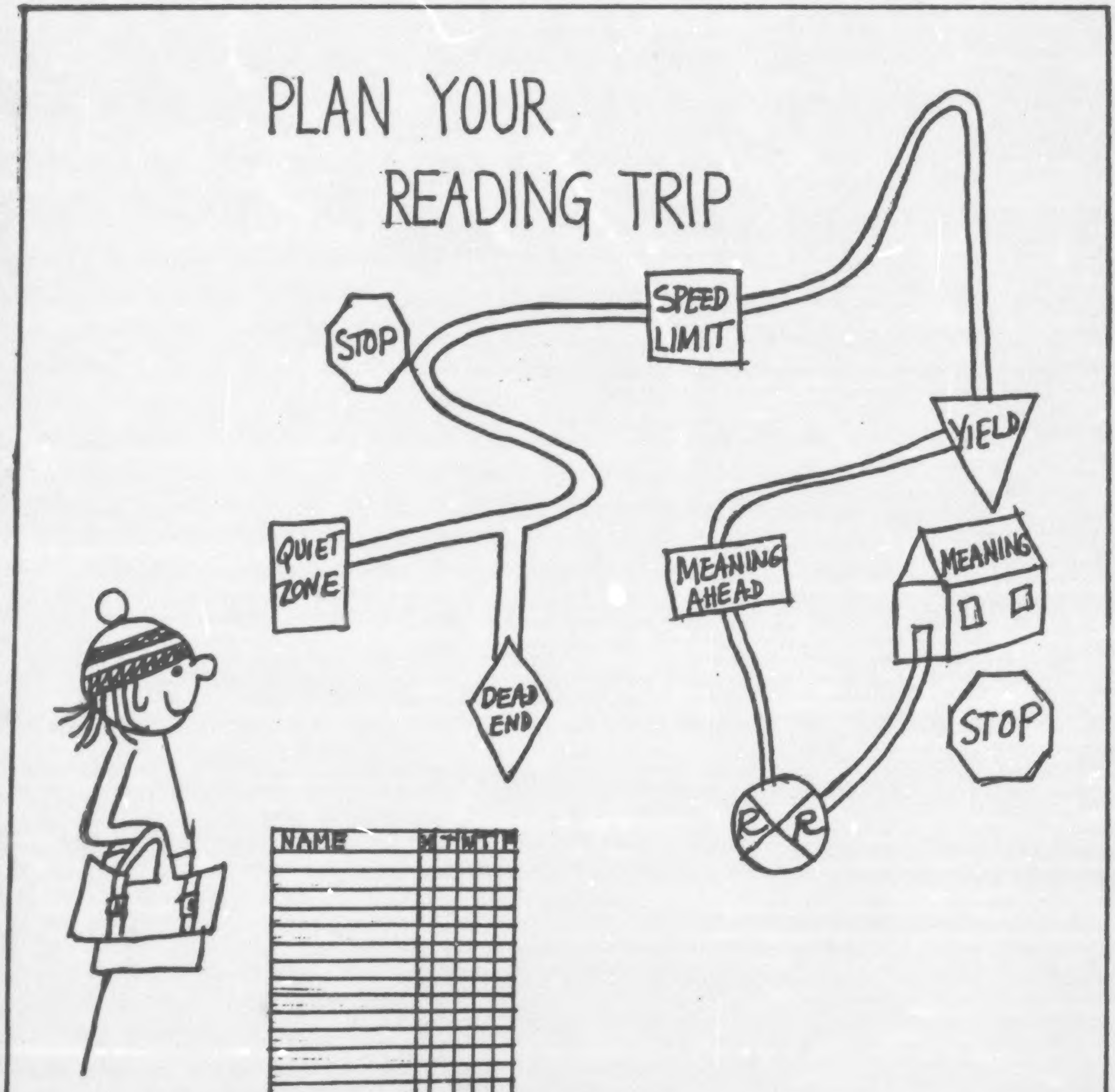
   This may be done in pairs.

4. As a group, go over the worksheet to discuss the process and check the work.

5. Review this week's lesson and encourage children to check their names on the bulletin board.

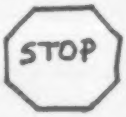
MODULE 4

BULLETIN BOARD


PLAN YOUR READING TRIP
STOP
SPEED LIMIT
YIELD
QUIET ZONE
DEAD END
MEANING AHEAD
MEANING
STOP
R R
NAME
M T W T F

What Happens to a Honeybee After it Stings

When a bee puts its stinger in your skin, the sting hurts. But that is only the beginning of the trouble. The outside of the stinger has a little hook on it. The hook holds the stinger in your skin.



The stinger is joined to a tiny bag of poison inside the bee's body. The honeybee squeezes poison through the stinger into your skin. The poison makes a red bump that may hurt for two or three days. The poison even makes people sick.

SPEED
LIMIT

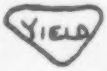
The bee may look fine after it stings you. It flies away. Maybe you're not watching the bee because you are taking care of the sting. You may not see that the bee usually dies before it gets home.

Why does the bee die? The bee's stinger is part of its body. When the bee flies away, it pulls very hard to get the stinger out. This strong pull rips the insides of the bee. Sometimes the bee can't get the stinger out of your skin at all. Then part of the bee's body is torn away. The bee will soon die.

A bee sting hurts a person. It kills the bee.

4:9
Module 4: Lesson 1
Worksheet 2

Who Was Laika?

People first heard about Laika in 1957. On November 3, 1957, Russia sent a satellite  into space. It was called Sputnik 2. The world's first space traveler was on board. She was a dog named Laika. Laika means "barker."

Until Sputnik 2 went up, no one knew what would happen to living things in space. Could animals live there? Could people travel safely in spaceships? What dangers would animals face in space? Laika's trip answered many of these questions.

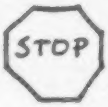
SPEED
LIMIT

For seven days, the dog circled the earth. She lived in a special cabin that was air-conditioned for her. Laika barked and moved about. She got food the same way she had been trained to get it on earth. The dog was well and happy.

People on earth were learning that animals could survive

in space. Perhaps men and women could be space travelers also.

The Russians didn't know how to bring Laika back to earth, so Laika died in Sputnik 2. She gave her life so people could learn about safe space travel. This dog's spaceship is sometimes called Mutnik 2.



WHO ARE THE AMA?

Some women in Japan have unusual jobs. These women dive to the ocean floor and gather food. Their mothers and grandmothers did this before them.

These women are called Ama. Some of them dive in shallow water. These Ama are called Kachido.

That means "Walking People".

The rest of the Ama go out to the sea in boats. They dive in deep water. These women are called Funedo.

That means "Ship People".

The Ama use just a few tools when they dive. They carry knives to cut food from the rocks on the bottom. They wear goggles over their eyes. They tie stones around their bodies to make them heavy so that they will sink to the bottom of the ocean floor. They also have a rope lifeline around them. But, the Ama do not have tanks of air. These women hold their breath under the water. Each time they dive they stay down just one minute. They cut the food from the sea floor. Then they tug on their lifelines, and someone pulls them up. Ama may dive 100 times each day.

The Ama have been diving in Japan for the last 2,000 years. But someday they may disappear. City jobs look better than diving jobs to many young women. They may not follow their mothers into the sea. This 2,000 year job could then come to an end.

ANDROCLES AND THE LION

Once there was a slave named Androcles who was badly treated by his master. When the chance came he escaped to the forest. In his wanderings he came upon a lion. His first instinct was to turn about and run. Then he noticed that the lion seemed to be in great pain and was moaning and whimpering.

As the slave came near, the lion put out his paw, which was bleeding. A large thorn was sticking from one of the lion's toes. Quickly, Androcles pulled out the thorn and wrapped up the sore paw. To show his gratitude the lion licked the man's hand like a dog and then led him to a cave for shelter. Every day after his wound had healed, he would go hunting in the forest and return with fresh meat for his master to eat.

But one day when Androcles and the lion went out together, they were both captured and taken to the city to be used in a show. The slave was to be thrown to the lion, after the animal had been kept without food for several days to make him more mean.

The emperor and all his court came to the arena to view the show. The slave was unchained and let out into the arena. Then the lion was let loose and rushed roaring toward Androcles. But as soon as he came near him, he recognized his friend. To the surprize of the crowd, the lion seemed to love the slave. They had expected to see him torn to pieces by the beast. The emperor was pleased to see this and he called Androcles to him. The slave told him the whole story. The emperor pardoned the slave and freed him. The lion was also set loose to return to his native forest.

MORAL: A FRIEND IN NEED IS A FRIEND INDEED.

Module #5

Topic: READING GOALS AND KINDS OF MEANING Metaphor: "WHAT'S IN THE MEANING?"

Introduction

We have emphasized that two goals of reading are understanding and pride. We illustrated the comprehension goal of understanding as a "light bulb" filled with the ideas from text. This week we want to elaborate the kinds of meaning that are possible from reading in terms of several light bulbs. The three types we will emphasize are: literal, inferential, and personal meaning.

Rationale

Most children believe that reading involves saying the words correctly and understanding the message. Usually they assume that comprehension follows automatically from pronounciation. The notions that meaning is more than literal translation and that the reader actively constructs meaning are seldom apparent to children. We believe that if children are aware of these purposes while reading, then they will approach reading as a problem-solving, hypothesis-testing kind of activity.

Furthermore, children often do not distinguish among types of reading that require different comprehension goals. For example, reading traffic signs or directions involves literal translation while reading a mystery story requires inferences and hypotheses about the characters and outcomes. Part of reading comprehension, therefore, requires a sensitivity to the type of reading material and the goals of understanding based on the level of meaning desired. During this week we shall demonstrate the differences among the literal meaning, the implied meaning, and the personal meaning that can be extracted from sentences and text.

Objectives

1. To make children aware of different kinds of meaning that can be acquired from reading.
2. To help children recognize different comprehension goals for different types of reading material.
3. To promote interpretive, evaluative, and inferential processes for reading comprehension.

Instructional Techniques

1. Before children begin to read, ask (or tell) them what "kind of reading" it is. Ask them what their reading goals are and what kind of meaning they are trying to get.

2. Use the kinds of meaning as an introduction for reading assignments. For example, if children read poems, the personal meaning is important, whereas the literal meaning is foremost when reading "facts" about history or science.

3. When children finish reading, ask them about the kinds of meaning that they read. You can note the difference here between memory for the information and interpretation of the message. This can foster critical reading skills.

   Questions to focus reading/discussion might include:

   a. Why do you think the author wrote this?

   b. Are the words s/he used good ones? Did they help you get the meaning?

   c. Did you like the story? If so, why? If not, why?

   d. What do you think will happen next?

   e. How do you think the character felt? What part tells you this?

Connections to Bulletin Board Display

The bulletin board will show three "light bulbs for meaning" labeled literal, inferential, and personal meaning. Examples will be given of each type and students will be asked to fill in the three kinds of ideas from a story that they read. The questions on the board are:

What do the words say?

What is the message?

What does it mean to me?

References

Brewer, W.F. Literary theory, rhetoric, and stylistics: Implications for psychology. In R.J. Spiro, B.C. Bruce, & W.F. Brewer (Eds.), Theoretical issues in reading comprehension. Hillsdale, New Jersey: Erlbaum, 1980.

Canney, G. and Winograd, P. Schemata for reading and reading comprehension performance (Tech, Rep 720). Champaign, Illinois: University of Illinois, Center for the Study of Reading, April, 1979. (Eric Document Reproduction Service No. RD 169 520).

Module 5: Lesson 1

"WHAT'S IN THE MEANING?"

Goal

Children will be able to recognize that there are different types of comprehension: literal; inferential; and personal.

Bulletin Board Questions

1. What do the words say?
2. What is the message?
3. What does it mean to me?

Procedures

1. Review the last lesson before Christmas "Planning Your Reading Trip."
    a. What do you need to do before you start to read?
    b. What do you do (which signs do you need to obey) while you're reading?
    c. What's the goal of reading?
2. "Yes, the goal of reading is to get the meaning. Today, we're going to talk about the meaning. There are many different kinds of meaning. There are many different kinds of reading."
    a. "Sometimes we don't understand the meaning because we can't read or don't understand the words." Put one light bulb on the board. "What the words say is one kind of meaning: literal meaning."
        1) Read the story together aloud to see what the words say. The selections are "A Big Boy Hit Me" for 3rd grade, and "A Punch From Sam" for 5th grade (pp 5:9 & 5:11).
        2) Ask literal level questions (see pp. 5:10 and 5:12) and record answers in the literal light bulb.
    b. "There's another kind of meaning also. When you say the meaning in your own words, you are usually making an inference. What the story means (what's the message) is another kind of meaning: inferential meaning."

1) Put another light bulb on the board.

2) Ask inferential questions (see pp. 5:10 and 5:12).

3) Point out how what the words say is different from inference. e.g., the boy in the story was a big boy (the words tell us that), but we also know that he is mean, a bully, etc. (that's an inference).

c. "There's another kind of meaning: what you think about the story, what it means to you." Put another light bulb on the board. "What the message means to you is another kind of meaning: personal meaning."

Discuss the story in terms of how the children feel about it. See the questions for personal meaning (pp. 5:10 and 5:12).

3. "You see, we really have three different kinds of light bulbs, or meaning, everytime we read."

4. "This week when you're reading, think about the three kinds of meaning. Are you sure you got the meaning, all three kinds? Remember to check your name on the chart."

Materials

A Big Boy Hit Me by R. M. Fisher, M. Hynds, A. M. Johns, and M. G. McKenzie. Glasgow: Blackie and Son, 1972

"A Punch from Sam" by M. Mantell. In Journeys, Prose by Children of the English-Speaking World. (Ed. by R. Lewis). New York: Bantam Press, 1969, p. 121.

Module 5: Lesson 2

"WHAT'S IN THE MEANING?"

Goal

Children will recognize that the meaning may be different for different kinds of reading. Children will be able to read for the literal, inferential, and personal meanings in three passages.

Bulletin Board Questions

1. What do the words say?
2. What is the message?
3. What does it mean to me?
4. What kind of reading is this?
5. What kind of meaning does it have?

Procedures

1. Different kinds of reading require different kinds of meaning.

2. "Who can remember some of the different kinds of reading we have been talking about?" Differentiate between fiction and non-fiction and the different types in each category.

3. "Today we are going to talk about the different kinds of meaning in different kinds of reading."

   Review the three kinds of meaning from Monday, using the bulletin board to tie together the kinds of meaning and the questions.

4. "For example, if I left a note for 'Joe' (or other child in class) to go to the store and buy a dozen eggs and a loaf of bread, which kind of meaning must Joe get from the note?" (Stress that the meaning is mostly literal--Joe must do just what it says. He can't use his imagination to go beyond the words. He must get the things on the note). "That's the sort of reading you do when you read directions, take information from the board, etc."

5. "But, sometimes there are different meanings in reading and today we will practice the different meanings."

   Hand out worksheets. Worksheets #1 and #2 for 3rd grade; worksheets #1 and #3 for 5th grade.

6. Read through the worksheets, fill in the light bulbs together. See below for the questions and guiding points for each page. Children "light-up" their light bulbs when they are done. Record the answers on the board for the children to copy in the appropriate bulb.

Questions for Worksheets

A. Raisin Advertisement

1. "What kind of reading is this?"

2. "What do the words say about raisins?" (Literal)

   Answers to be recorded in the light bulb on the chalkboard include: good snacks, no preservatives, chewy and sweet.

3. "Why are they saying these things about raisins?" (Inferential)

   Answer: They want you to buy the raisins.

4. "Who is this advertisement for?" (Inferential)

   Answer: Mom, Dad, parents, adults.

5. "Find the words that tell you." (Literal)

   Answer: "Next time your kids want snacks...."
   "Why not give your kids a bit of the sun?"

6. "What about the personal meaning...."

   a. "What do you think about raisins (like or dislike)?"

   b. "What do you think about the ad (would you buy raisins after reading this)?"

   Children frequently commented on the truthfulness, or lack of it in the ad. Also, fifth graders were able to come up with alternate ideas about how to advertise the raisins.

   Additional personal meanings: Living in California, knowing that raisins come from grapes because had seen it....

B. Science Passage, 3rd grade

1. "What kind of reading is this?"

2. "Find the words that tell you where the starfish move." (Literal)

   Answer: Along the bottom of the sea.

3. "So, what does that tell you about starfish?" (Inferential)

   Answer: They live in water.

4. "Find the words that tell what the starfish do with their tube feet." (Literal)

   Answer: Pull open a clam or scallop.

5. "Why do they do this?" (Inferential)

   Answer: To eat them.

6. Personal meanings:

   a. "Have you ever seen a starfish? Where?"

   b. "Do you agree that they look like they are described in the story?"

   c. "Did you like or dislike the story about the starfish?"

C. Science, 5th grade

1. "What kind of reading is this?"

2. "What do the words say about whales?" (Literal)

3. Inferential statements:

   a. The children can infer that whales are larger than dinosaurs from "...creatures larger than dinosaurs...."

4. "What else does it say about whales?"

   a. They live in oceans.

   b. They are warm-blooded.

   c. They are mammals.

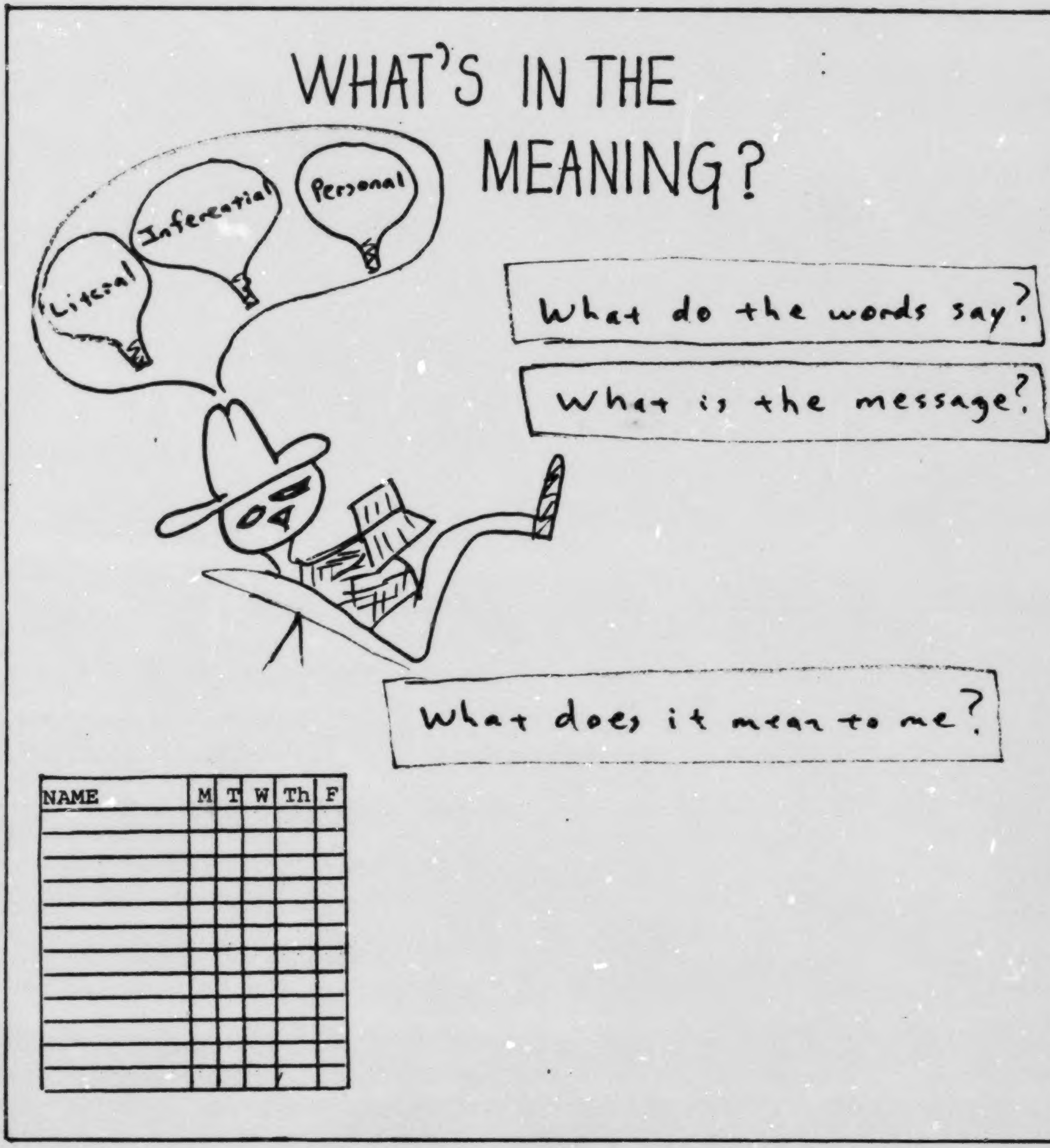
   d. Walruses and men are also warm-blooded.

Establish with the children that poetry is almost all inferential and personal meaning and leave p. 5:16 with the children to do on their own.

Remind the children to ask themselves questions this week.

MODULE 5

BULLETIN BOARD


WHAT'S IN THE MEANING?
Literal
Inferential
Personal
What do the words say?
What is the message?
What does it mean to me?
NAME
M
T
W
Th
F

A Big Boy Hit Me

I was playing with my ball.

I kicked my ball.

I ran after my ball.

A big boy hit me.

A big boy took my ball.

Questions for Selection #1: "A Big Boy Hit Me"

Literal

1. What was the boy playing with?
2. What did the boy do to his ball?
3. What kind of boy came along?
4. What did he do to the boy?
5. What did he do to the ball?

Inferential

1. Was the boy playing with other kids?
2. What was the boy doing in the story? Explain it.
3. What kind of boy came along? Describe him. What parts tell you he was a bully, mean?
4. What do you think will happen next?

Personal

1. Did anything like that ever happen to you?
2. How do you feel about the boys in this story?
3. Why do you think the author wrote it?
4. Did you like it?

A Punch from Sam*

One day Joe Nash was walking by Sam the girl. Just then Sam punched Joe in the eye. Then he went home. Hey mom! Sam punched me in the eye. Why didn't you punch him back? I don't know. Joe come here. Okay mom. Put the spoon on your eye. Just then dad came in. What are you doing, dear? I told Joe to do it. That's an old trick grandma told me. The next day Joe was punched again. Mother said put the spoon on your eye. The next day there was a carnival. The twins went with their mother and father and Joe. Joe saw Sam there. Just then Sam kicked Joe. Dad asked why don't you kick him? It's a girl dad.

---

*I used an edited version. This appears in Journeys, p. 121.

Questions for Selection #2: "A Punch from Sam"

Literal

1. Who are the children in this story?
2. What did Sam do to Joe?
3. What did Mom tell Joe to do?
4. Where did Joe go with his father?

Inferential

1. Why did Mom tell Joe to put a spoon on his eye?

   Example to explain inference:

   a. The words say it's a trick from grandma.

   b. The inference is that Joe's eye was swollen and it would help his eye.
2. How many times did Joe get kicked?
3. Why didn't Joe kick Sam back?
4. What kind of person is Sam?
5. What do you think will happen next?

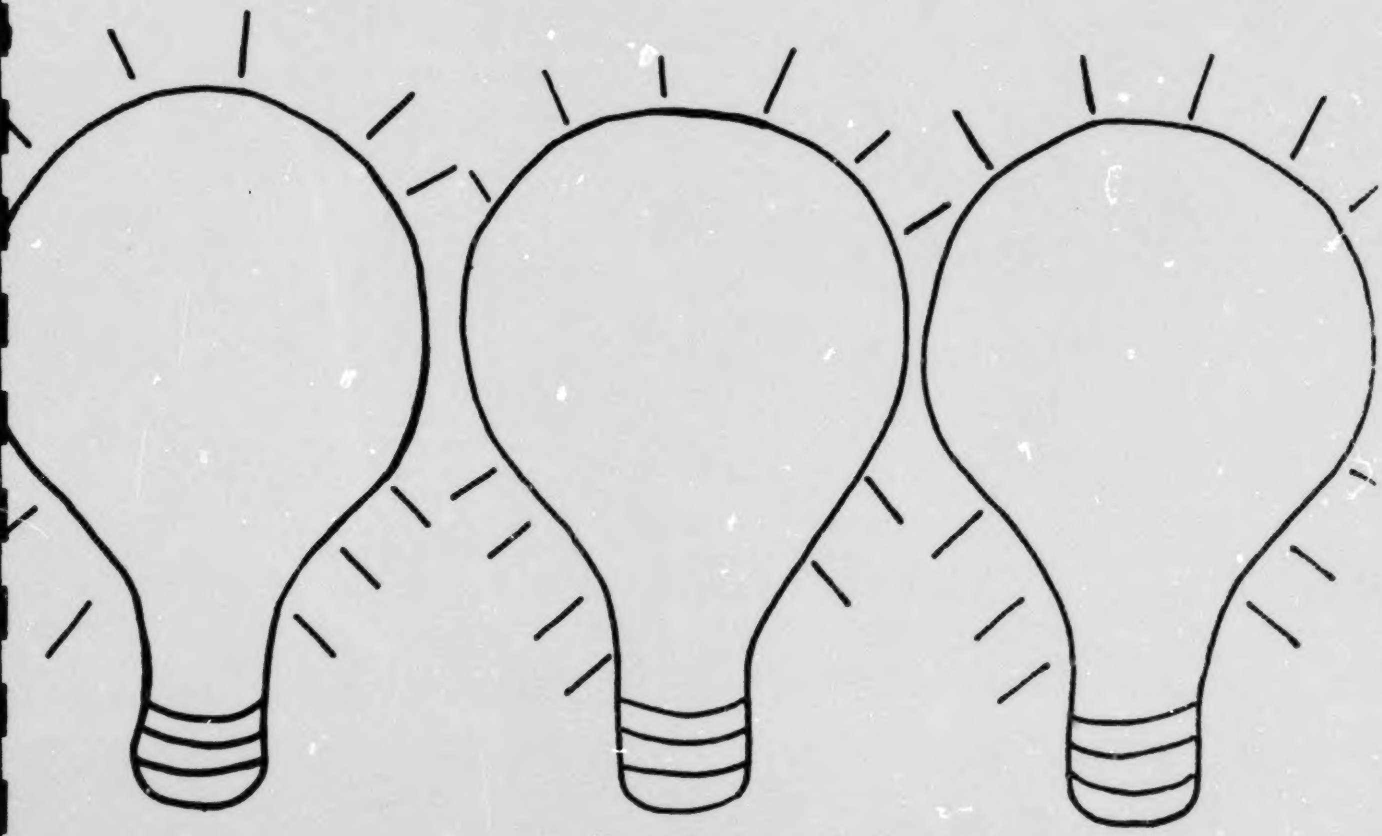
Personal

1. How do you feel about the story?
   a. Do you agree with Joe's reason for not kicking back?
   b. Do you agree with Joe's parents' advice?
2. Has anything like this ever happened to you?
3. How would you handle the problem?
4. Why do you think the author wrote it?

WINTER IN THE NORTH

Once a year comes a cold season
It is called Winter. It is so peaceful.
The woods are filled with snow, little mouses
running about looking for food.
With little white rabbits in their new winter coats.
No noisy birds whistling songs.
No crazy people ganging around
Because it is too cold at the playground.

And that makes it beautiful
Not a sound.



CALIFORNIA RAISINS.

NATURE'S CANDY.

May we present the guy who makes our snack so good for kids.

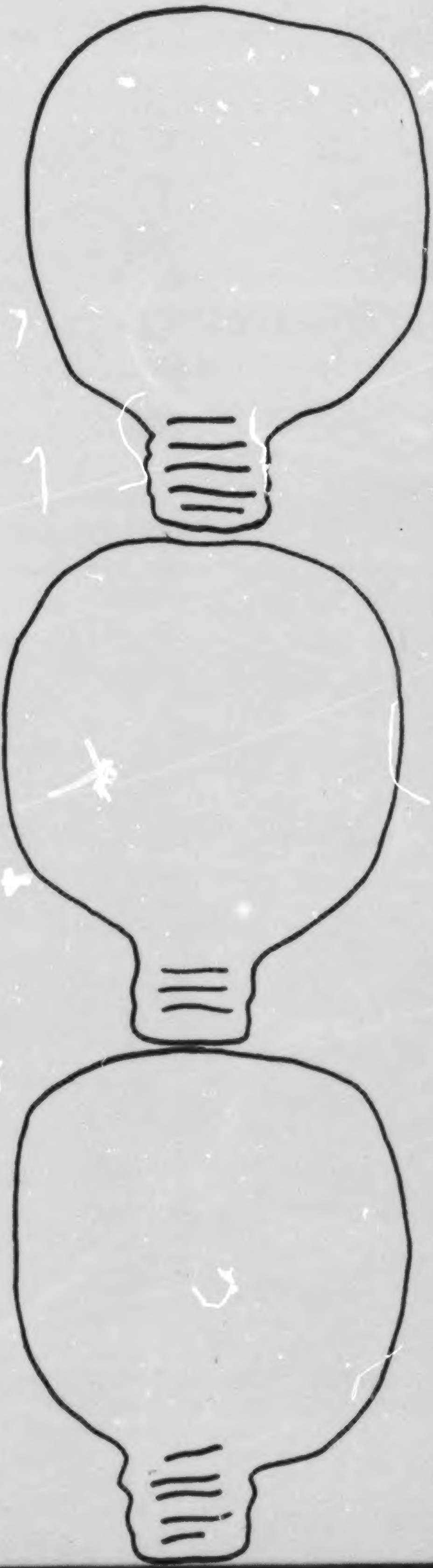
He's a familiar sight. An old friend. And makes a snack kids love without using preservatives, additives, or the artificial this-or-that you find in most manufactured snacks.

Because the sun dries raisins naturally, he doesn't need artificial help to make them chewy or sweet.

Next time your kids want snacks, give them raisins.

Why not give your kids a bit of the sun.

RAISINS FROM CALIFORNIA.



Here is a starfish

It has five arms and a spiny skin.

If you turn it over you can see little

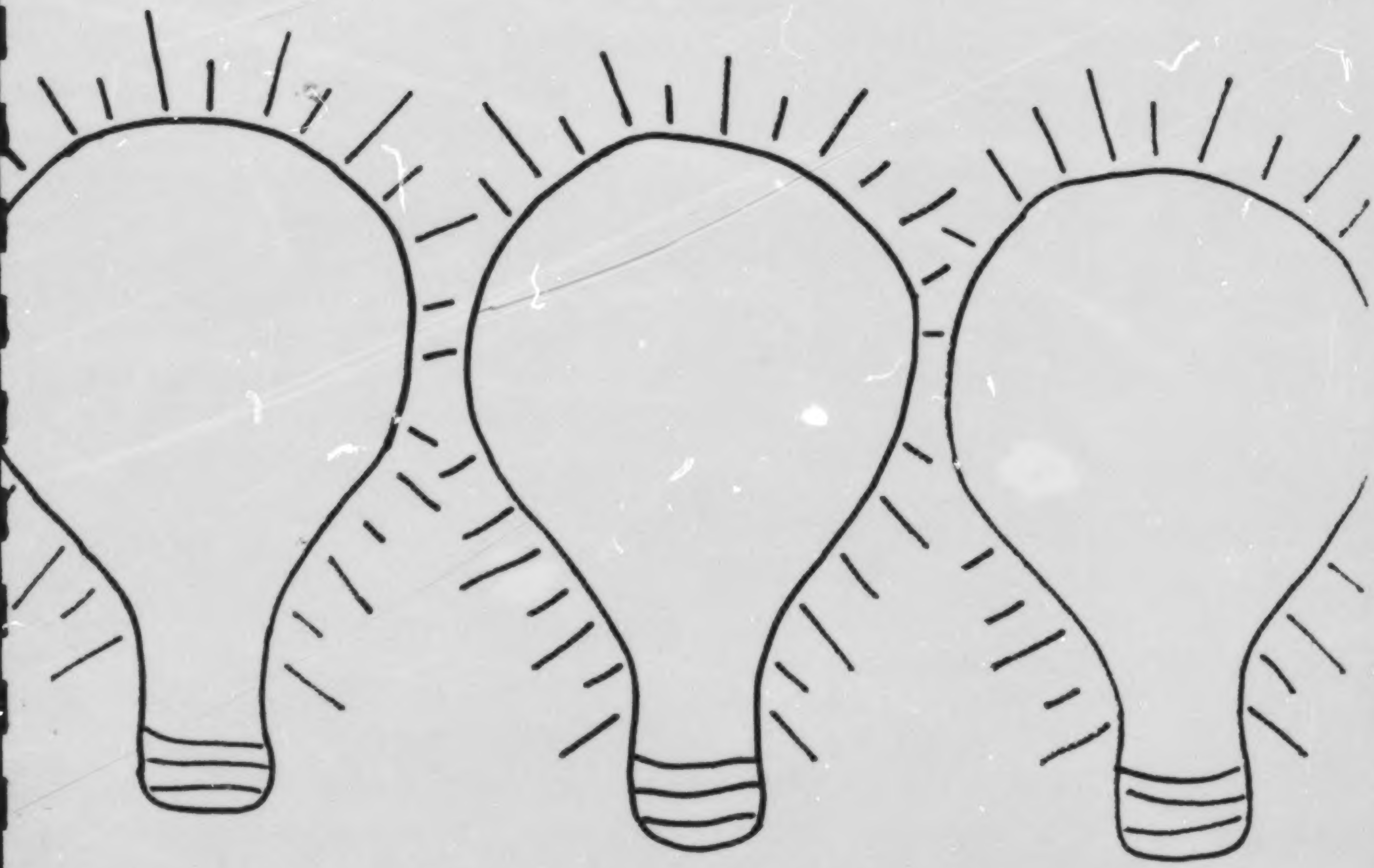
tubes that move.

They are called tube feet.

They help the starfish move along

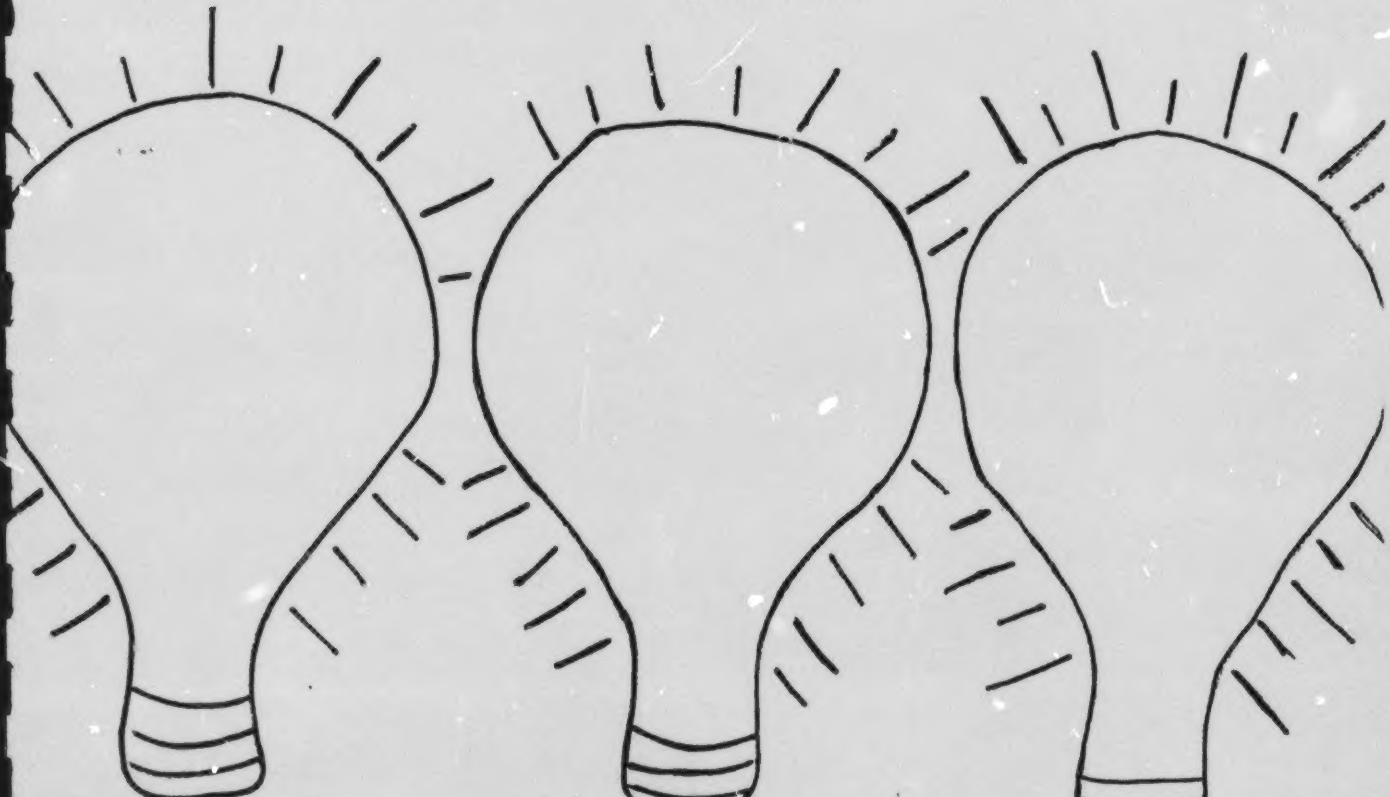
the bottom of the sea.

They also help it pull open a clam or a scallop.



THE WHALES

Most people think that the largest animals that ever lived on the earth were the dinosaurs. These giants of the past were large indeed-- some of them were even bigger than a house. And yet, living on earth right now, are creatures larger than even the largest dinosaurs. These modern giants are members of the whale family. They live in oceans of the world and are warm-blooded mammals, just as the seals, walruses-- and men.



Module #6

Topic: ABSTRACTING CRITICAL INFORMATION

Metaphor: "TRACKING DOWN THE MAIN IDEA"

Introduction

One of the constructive aspects of reading comprehension is identifying the main ideas in text. Sometimes pictures, titles, and teachers' remarks guide the child to an appropriate hypothesis, but the reader must still sift through irrelevant information and condense the "gist" of the message. The main ideas might involve literal, inferential, or personal meaning--dependent upon the kind of reading--in this constructive part of comprehension. Expository prose that conveys facts might be distilled by a title (such as "Exports of Brazil") while a narrative story might require a descriptive scenario. The purpose of this week's lesson is to teach children how to use clues to identify the main points or central ideas in a passage.

Rationale

If children do not consider the reading task before they begin to read, they often may not have a good idea of the passage focus. We want to encourage preliminary task analysis so that children know the kind of material, difficulty, length, purpose, and so on before they begin reading. Using clues (such as the title) to generate hypotheses about the core ideas is one part of this process. A second aspect is discriminating relevant from irrelevant information. If children do not have a general focus while they read, they cannot concentrate on pertinent parts of the passage. Indeed, research suggests that children even in grades 5 and 6 often cannot identify the most important parts of passages.

A third aspect of getting the main idea is to identify narrative schemes of setting-actors-actions-outcomes. This framework provides a convenient summary of information and answers questions like "where, who, how, and what" from the passage. Finally, we want to emphasize the importance of abstraction and condensation of the central ideas by teaching children to summarize and paraphrase the story. This provides a kind of rehearsal for memory as well as a check to see that the passage was understood.

Objectives

1. To hypothesize about the focus of a passage before they begin to read.
2. To use clues to construct the main idea. To distinguish between relevant and irrelevant information as an aid to constructing the main idea.
3. To ask who, what, where, how, why questions as a check on understanding.
4. To paraphrase and summarize the meaning so they can tell someone else about the passage.

Instructional Techniques

1. Ask children to generate the theme or focus of the passage before reading. If the lesson is on American history for example, ask them questions about the time period and events that might be related to the passage. Encourage hypotheses and expectations about the information to be read.

2. Ask children to judge if a sentence, fact, or idea is central or unimportant to the passage. Contrast relevant and irrelevant information by showing how the meaning of the passage or story would be less clear without the critical bit of information.

3. Ask children to underline the important idea in the passage or 2 or 3 critical sentences. Help them identify the most informative clues or facts in the text.

4. Ask children who, what, why, etc. questions as they read and after they have read as checks on critical information. Focus on the setting-actors-action-outcome sequences.

5. After they have read a selection (or a portion of it), ask children to summarize it in a few sentences, orally or in writing. (This is not to be rote recall, but paraphrasing. Praise children who make the effort to say it in their own words.)

Connections to Bulletin Board Display

The bulletin board will show footprints as tracks leading to question marks. Each footprint will include a "clue" that can be used to identify the main point (e.g., title, pictures, summarize). We want to make the analogy of searching for the main idea and constructing/summarizing it from clues. The focal questions are:

1. Have I used the clues to track down the main idea?

2. Did I ask myself who, what, where and why questions?

3. Did I get the main idea?

References

Brown, A.L. & Smiley, S.S. Rating the importance of structural units of prose passages: A problem of matacognitive development. Child Development, 1977, 48, 1-8.

Bruce, B. & Rubin, A. Strategies for controlling hypothesis formation in reading (Reading Education Report No. 22). Urbana, IL: Center for the Study of Reading, University of Illinois at Urbana-Champaign, 1981 (ERIC Document Reproduction Service No. Ed. 205 912).

Collins, A. Brown, J.S. & Larkin, K.M. Inference in text understanding. In R.J. Spiro, B.C. Bruce, & W.F. Brewer (Eds.), Theoretical issues in reading comprehension. Hillsdale, N.J.: Erlbaum, 1980.

Module 6: Lesson 1

"TRACKING DOWN THE MAIN IDEA"

Goal

Children will be able to define "main idea." They will be able to list the clues that can be used to construct the main idea.

Bulletin Board Questions

1. Have I used the clues to track down the main idea?
2. Did I ask myself who, what, where and why questions?
3. Did I get the main idea?

Procedures

1. Comment on last week's chart and call attention to the bulletin board for this week.
2. Have a child read the title of the bulletin board. "Who can tell me what the main idea is? Any other ideas?"

   "The main idea is the most important meaning in a story. It is the big idea--the main thing that the story is about."
3. "This week we are going to find out what things in a story or a chapter will lead to the main idea."
4. "What are the two types of reading?" (Fiction and non-fiction.) "Because there are two types of reading, there are often two ways to get at the main idea." Refer to the bulletin board and the fact that the tracks lead in two different directions.

   a. "First, we'll talk about fiction. What are the important things in a story that will help you to get to the main idea?" Read fiction tracks from the bulletin board.

      1) Read "The Strength of the Wind and Sun" as a group. (See p. 6:8, Selection 1.)

      2) Use the bulletin board tracks to guide the reading:
         -title
         -pictures
         -setting
         -characters
         -actions
         -outcomes

   3) After identifying each of these in the story, have children turn over their stories and select the best main idea for the story by circling it. (The choices are two morals, see back of 6:8.)

   4) Discuss the main idea. What is the meaning of the main idea for "The Strength of the Wind and Sun" story?

b. Repeat the same steps using the tracking guides for non-fiction (Selection #2): title, headings, vocabulary, and summary. Use Selection #2 for 3rd grade and Selection #3 for 5th grade.

5. Summarize: "Be thinking of what the main idea is while you read this week. What's the really important part?"

   Reread the three questions on the board and remind children to place a check beside their names when they use the focal questions independently.

Materials

1. "The Strength of the Wind & Sun" adapted from Aesop's Fables, selected and adapted by Louis Untermeyer. Illustrated by Alice & Martin Provensen. New York: Golden Press, 1965, p. 63.
2. Globes
3. Hemispheres

Module 6: Lesson 2

"TRACKING DOWN THE MAIN IDEA"

Goal

Children will be able to list the clues that can be used to get the main idea. They will be able to find those clues in two different types of reading material and construct a main idea.

Bulletin Board Questions

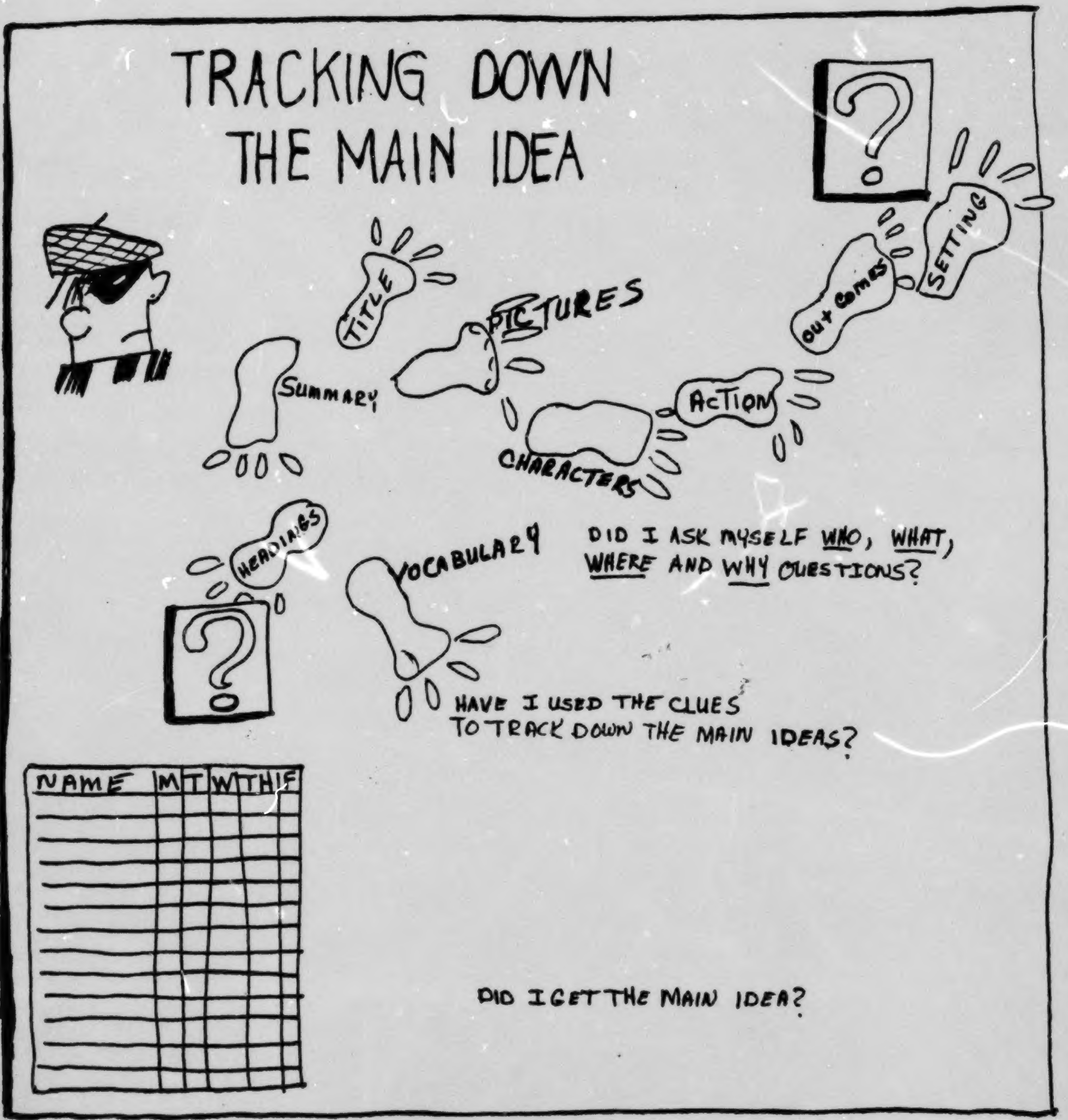
1. Have I used the clues to track down the main idea?
2. Did I ask myself who, what, where and why questions?
3. Did I get the main idea?

Procedures

1. Review the notion of tracking down the main idea.
2. Tell children that today they will find each of the clues in a story and track down the main idea.
3. Use the attached worksheet to guide the exercise. Do fiction first. Use Selection #4, "The Fox and the Crow." If the children need help figuring out which clues to use, refer them to the bulletin board.
    a. Have children fill in the footprints with the appropriate information.
    b. When children have written a main idea, have them choose the appropriate moral from the back of the worksheet. Ask: "Does your main idea match the moral of the story?"
4. Repeat the process with non-fiction. Today the children will listen to a passage. This will be to help them begin to form main ideas from much more lengthy text. (See pp. 6:12-6:14 for the passage.)
    a. Read the passage. The children have the tracking sheet in front of them, so they can take notes. The fifth graders in particular can do this.
    b. Have them follow the steps and conclude a main idea.
5. Review the week's theme and repeat the questions.

MODULE 6

BULLETIN BOARD


TRACKING DOWN THE MAIN IDEA
TITLE
PICTURES
SUMMARY
CHARACTERS
ACTION
OUT COMES
SETTING
HEADINGS
VOCABULARY
DID I ASK MYSELF WHO, WHAT, WHERE AND WHY QUESTIONS?
HAVE I USED THE CLUES TO TRACK DOWN THE MAIN IDEAS?
NAME M T W TH F
DID I GET THE MAIN IDEA?

Materials

1. "The Fox and the Crow" adapted from Aesop's Fables, selected and adapted by Louis Untermeyer. Illustrated by Alice & Martin Provensen. New York. Golden Press, 1965, p. 60.

2. "Some Imps Those Chimps," by Joseph Stocker in Joys and Journeys, grade 4, the READ series, American Book Company, 1968, pp. 376-382.

THE STRENGTH OF THE WIND AND SUN

The Wind and the Sun were fighting about their strength. "I have the strongest power that ever was," said the Sun. "Nothing can stand against me."

"Nothing except me" said the Wind. "My strength is far greater than yours."

"We will find out," said the Sun. "I know a way to settle the fight. Do you see that man coming down the road? If you can make him take off his coat, you will be called the strongest. If I do it, I will be the strongest. You try first."

The Sun hid himself behind a cloud while the Wind began. The Wind blew. The man bent his head. The Wind whistled. The man shivered. The wind roared and sent icy blasts against the man. The harder the Wind blew, the closer the man wrapped his coat about him.

"My turn now," said the Sun as it came out from behind the cloud.

At first the Sun shone gently, and the man unbuttoned his coat. Then the sun covered the whole earth with warmth. Within a few minutes the man was so hot he was glad to take off his coat and find a shady place.

GLOBES

All people live on earth. You live on this earth. All your neighbors live on the earth. There is land and water on the earth. You live on the land.

A globe is a model of the earth. The shape of the earth is round. A globe is round. A globe shows the shape of the earth.

Large bodies of land are called continents. Continents are also on a globe. Continents are different sizes. Some continents are larger than others.

North America is a large body of land. North America is a continent. We live on the continent of North America. What other things do you think you would see on a globe?

NORTH AMERICA

HEMISPHERES

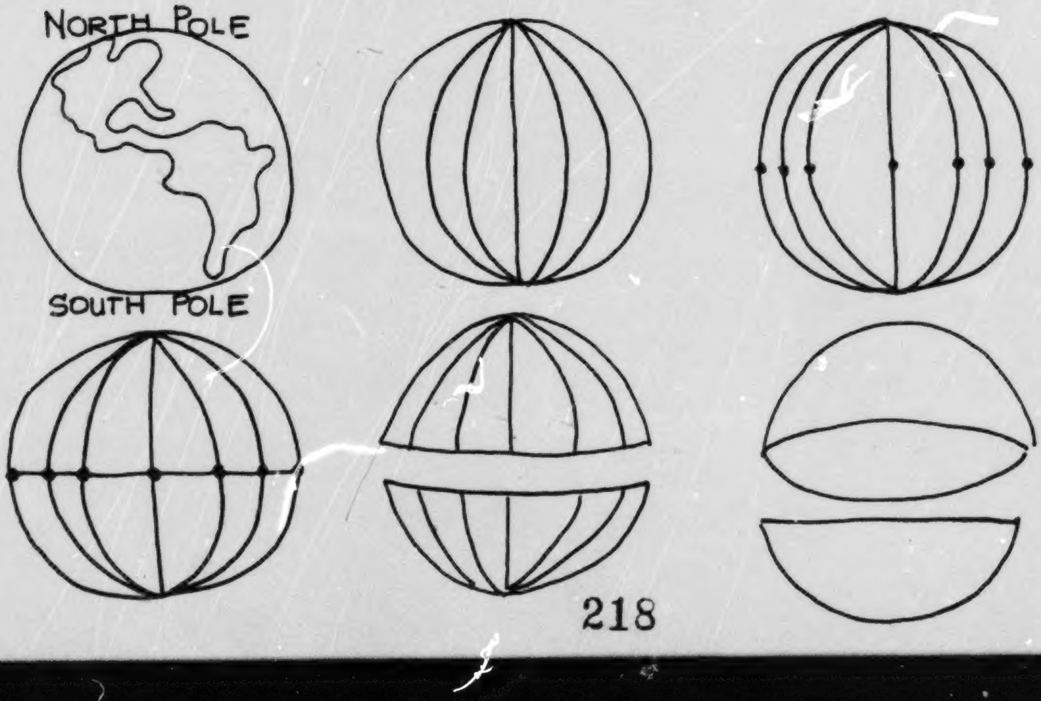
An orange, a beach-ball, and an apple are all about the same shape. All of them are round like balls. All of them are spheres. A sphere is something that is round like a ball.

Any sphere can be cut into two parts. When a sphere is cut in half, each part is the same size. When two parts are the same size, the parts are equal in size.

A globe is a sphere. Lines that run from pole to pole can be drawn on a globe. A dot can be placed on each north-south line, halfway between the two poles. Each dot divides its line into two equal parts.

A line can be drawn through all the dots. The line is called the equator.

The earth is a sphere. It can be divided into two equal parts. Half of a sphere is called a hemisphere. The North Pole is the hemisphere north of the equator. The South Pole is in the hemisphere that is south of the equator. What do you think the hemisphere north of the equator is called? What is the hemisphere south of the equator called?



THE FOX AND THE CROW

A Crow had stolen a good-sized piece of cheese from a cottage window and had flown with it into a tall tree. A Fox, who had seen this happen, said to himself, "If I am smart, I will have cheese for supper tonight." He thought for a moment, and then decided on this plan.

"Good afternoon, Miss Crow," he said. "How really beautiful you look today. I've never seen your feathers so glistening. Your neck is as graceful as a swan's and your wings are mightier than an eagle's. I am sure that if you had a voice, you would sing as sweetly as a nightingale."

The Crow, pleased with such praise, wanted to prove that she could sing. As soon as she opened her mouth to caw, the cheese fell to the ground and the Fox snapped it up.

As he trotted off he made things worse by calling back to the Crow, "I may have talked much about your beauty, but I said nothing about your brains."

SOME IMPS, THOSE CHIMPS

His name was Ham. For a few hours in February of 1961, he was the most famous living creature in America. He was a chimpanzee.

Ham was the chimp chosen to blaze a trail into space for the first American astronauts--to make the first test flight for man. Why a chimp? Because chimpanzees resemble men in many ways, in body, mind, and nerves.

The chimpanzee is the smartest and most man-like animal in the world. Sometimes it seems to be more human than beast. It is like man in size and build, strength, and average length of life. It seems to have human feelings, too. It can laugh and cry, though it does not shed tears. It has a sense of fun and humor. It can even feel sorry for another creature, as a scientist once proved in his experiments with a chimp.

Chimpanzees have another likeness to man. It is a startling and important one. Chimpanzees can reason, or think, just as human beings do. They are able to reason very well indeed. Time and again they have proved how smart they are.

It is this amazing intelligence of chimps that interests man the most. Certain scientists now work with chimps all the time. The researchers believe they can learn more about human beings by studying chimpanzees, because these animals are so much like men.

From this research has come a number of delightful stories about chimps. In one experiment, a chimp was placed in a bare room where a banana was hung quite high, far out of his reach. A pole was placed in the room, too. The question was whether the chimp was smart enough to use the pole to knock down the banana.

He was even smarter. Instead of using the pole to knock down the fruit, he stood it under the banana. Then he zipped up the pole like a flash, grapped the banana, and leaped lightly to the floor as the pole toppled. That way, he got the banana in better condition than it would have been if he had hit it, and knocked it down.

The story is told of one chimp that thought a mean trick had been played on him. He was in training for the astrochimp project. One day a vet gave him a banana just before he was to take a "rocket sled" ride. While the chimp was peeling the banana, the sled started off with a sudden lurch. As a result the chimp got the mushy banana full in the face.

A day or so later he was again being tested with the rocket sled. Again the vet offered a banana. The chimp took the banana all right. He peeled it--and smeared it all over the vet's face.

When chimpanzees are raised as pets from very early in life, their ability to learn seems almost fabulous. All chimps will mimic everything they see a person do, copying every movement. This mimicking undoubtedly helps the young chimps to learn a great deal in a hurry.

Perhaps the most interesting story of all is that of a young chimp named Viki. She, too, was raised in a man's home--but for a very special purpose. The scientist and his wife, who raised Viki, wanted to see how far a chimpanzee could develop--exactly how much one could learn.

Mr. and Mrs. Hayes treated Viki as if she were their own child. She was given the same kind of loving care, toys, and patient help in learning that a child would get. The result was that Viki learned everything a young child learns. What is more, she learned it faster than most children do.

She learned to feed herself with a spoon, wave bye-bye, open doors, turn the pages of a book, and draw a straight line. She washed her face and brushed her teeth. She could build a block tower and work a six-piece jigsaw puzzle. Mimicking the "grown-ups," like any child the same age, Viki "helped" with the dishes and patted her face with a powder puff.

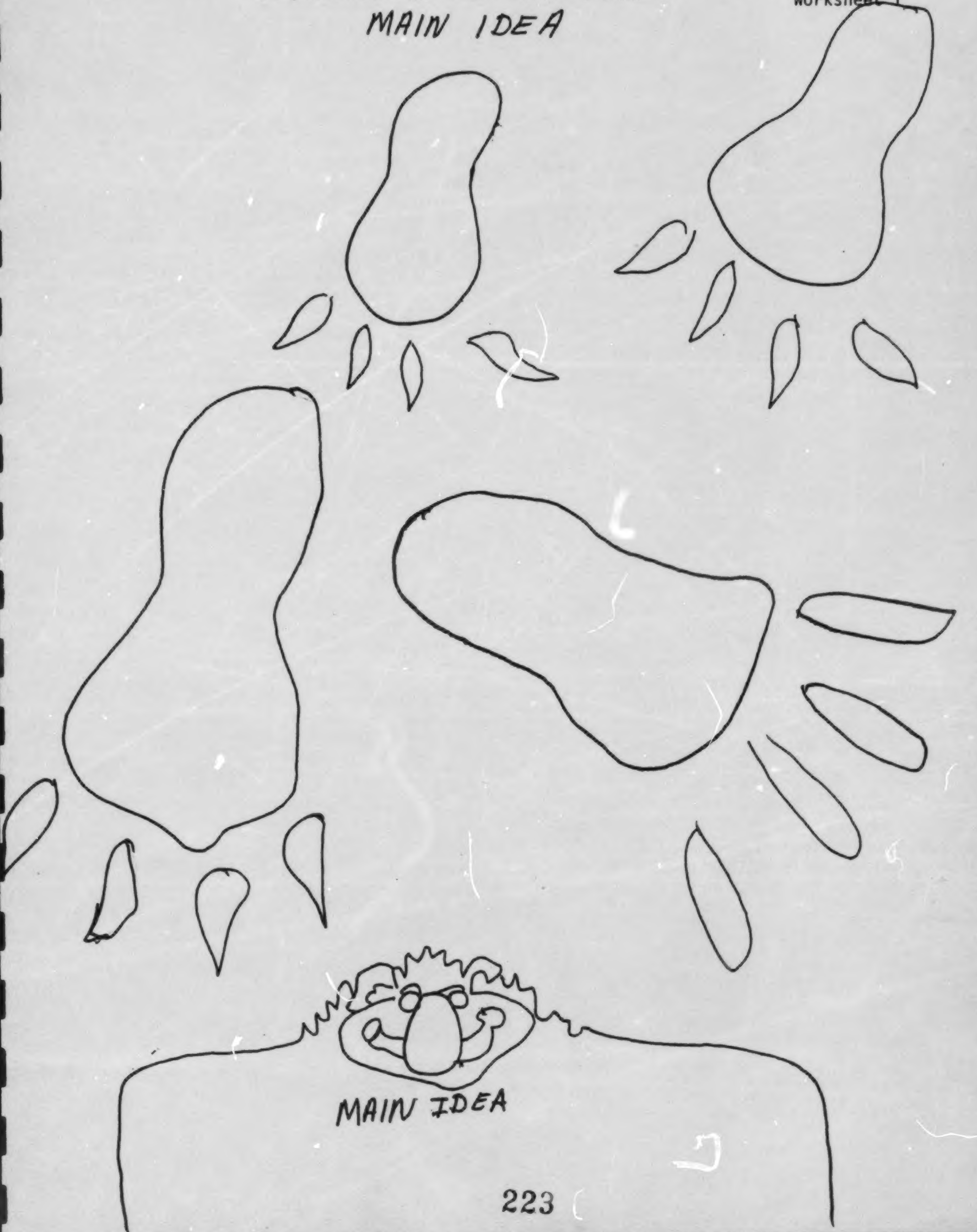
She understood about fifty different ideas or commands. She would go upstairs when told. She would obey a command to "put it back," "turn on the light," or "kiss mama." When somebody said, "Listen," Viki would bend her ear to the nearest wristwatch.

"Is it time for a party?" Mrs. Hayes, or her husband, would ask. Viki would make pleased noises and head for the kitchen and her can of cocoa, a food she loved. If someone asked, "Do you want to go to the show?" Viki would dash for the family automobile. There she would wait for what she knew was coming--an evening at a drive-in.

One time Viki's intelligence really put a man to shame. A family friend was trying unsuccessfully to start an electric fan. Viki checked the cord to see if it was plugged in. It wasn't. She plugged it in and started the fan. Said the visitor, "Did I feel foolish!"

6:16
Module 6: Lesson 2
Worksheet 1

TRACKING DOWN THE MAIN IDEA



Module #7

Topic: AMBIGUITY AND INFERENCE Metaphor: "INFER THE HIDDEN MEANING"

Introduction

Reading involves both decoding and interpretation. This week we want to emphasize the constructive, inferential aspects of interpretation. The lesson builds upon the prior discussions of kinds of meaning (e.g., literal, inferential, and personal) and abstracting the main idea.

Inferences can be drawn from text in many ways. For example, one kind of inference is a pragmatic relation based on practical knowledge. If children read, "John fell out of the boat," they might reasonably infer that John got wet, John swam back to the boat, he dried off, changed clothes, etc. Or if they read, "Sue hit her finger instead of the nail," they might infer that Sue was building something and using a hammer.

These relationships of implied consequences, instruments, and presuppositions are not stated explicitly in the sentences but can be inferred. Our purpose this week is to make children aware of the difference between explicit and implicit relationships (i.e., literal and inferential meaning) and to show them how to infer the "hidden" meaning from sentences and prose.

Since the idea of an inference is a bit difficult for children to grasp, we shall use the words infer and inference in the lesson and give many examples. We think that one effective way to introduce the idea is to call children's attention to double meanings of words as in homonyms, puns, and riddles. For example, if children can derive two interpretations for a sentence such as "Did you ever see a butterfly?" (an insect and a stick of butter), then they are understanding more than the literal meaning of words. We shall use humorous ambiguity to introduce the notion of inferences and interpretation of literal meaning.

Rationale

The importance of inferential comprehension is obvious to adults but may not be clear to children who regard reading as "saying all the words correctly." By stressing multiple meanings of words and implications of text, children may become more aware of the constructive aspects of reading comprehension. Their conceptual knowledge of events, actions, and sequences can inform their meaning construction during reading if they will pause to consider the implied meanings of words and sentences.

Our own research (and many other studies) has indicated that children do not add the inferential relationships to stories that they read or hear as a spontaneous component of comprehension. They are capable of adding extra information about consequences, instruments, and so on when teachers question them, but children often do not supply their own elaborations and inferred meanings. Research has shown, however, that when children do supply inferred relations as they read and listen, their memory for the material improves greatly.

The appreciation of humorous ambiguity and inferential relationships in reading comprehension usually develops dramatically from 8 to 12 years of age. Thus, third and fifth grades are critical ages for emphasizing the value of constructing hidden meanings. This lesson will attempt to show children that they should look for hidden meanings, and it will provide practice at how to make pragmatic inferences while reading.

Objectives

1. To show children the ambiguity and double meanings of words and sentences.
2. To show how jokes, puns, and riddles require two interpretations, literal and inferential, for comprehension.
3. To show children that the literal meaning can be used to infer other information in a passage.
4. To show children that construction of implied meanings yields a richer interpretation of the passage.
5. To demonstrate that during reading periodic pauses for self-questioning can promote inferential understanding. "Why, how, and what happens next" kinds of questions will stimulate hypothesis testing and require making inferences.

Instructional Techniques

1. One good way to emphasize hidden meanings is to show ambiguity in words and sentences. Cartoons, riddles, homonyms, and double entendres occur frequently in many materials and provide a good opportunity for asking children about the different interpretations. Newspaper headlines, captions, and comic strips have examples nearly every day.
2. Games that provide clues also offer opportunities for inferential reasoning. Twenty questions, my-father-owns-a-grocery-story, I'm-thinking-of-something-red-and-round-that's-good-to-eat, and so on require children to make inferences about meaning. These can be done orally or in reading, in groups or individually, and can be funny and engaging for children.
3. Another technique is to provide a sentence (or several) as a starting point for a story and to have children write their own endings or stories from the premise information. Children's stories can be compared to show how different inferences were made. The new Choose Your Own Adventure series exemplifies how a story can take many different courses, all starting from one base.

4. Mystery stories also provide a rich opportunity for children to make inferences. Encyclopedia Brown, Nancy Drew, Hardy Boys, and similar stories require children to infer motives, consequences, agents, instruments, and so on. "Who-done-it" kinds of stories can be read aloud to children to promote listening comprehension and inferential skills easily.

5. Perhaps the easiest method is to stop children as they read and ask them questions about the implications of passage information. This can be done with questions interspersed or following their reading assignments, or it can be done orally in reading groups. The literal versus inferential meanings can be readily contrasted.

Connections to Bulletin Board Display

The bulletin board will depict a tree with sentences written on it. That is the literal meaning. The inferential or "hidden meanings" will be covered by doors in the tree or leaves that children can raise to find the alternative interpretations (e.g., butterfly). The device is intended to convey the notion of hidden or alternative meanings in a concrete fashion. The questions on the board will be:

1. Is there more than one meaning?
2. What is the outcome?
3. Why did it happen?

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Module 7: Lesson 1

"INFER THE HIDDEN MEANING"

Goals

Children will recognize that puns, riddles, and jokes rely on inference. What makes them funny is the difference between the literal and inferential meanings.

Bulletin Board Questions

1. Is there more than one meaning?
2. Why did it happen (what happened before)?
3. How did it happen (what did s/he use)?
4. What is the outcome (what happens next)?

Procedures

1. Read the bulletin board title. Ask the children what they think it means.

   Talk about inferential meaning. Put "inferential," "inference," and "infer" on the chalkboard.

2. Explain: "In order to get the inferential meaning ( ), you must make an inference. You must infer the meaning."

   "Remember that what the words say is only part of the meaning. You also have to get the message--the hidden meaning."

3. "One of the times you need to infer the hidden meaning is when you read a joke or a riddle." Demonstrate with the bulletin board examples.

4. Point out that what makes these things funny is the difference between what the words say (the literal meaning) and what you know it means (the message--the inferential meaning).

5. "Today we're going to have some fun by inferring the hidden meaning in some jokes, riddles and puns"(explain puns).

6. Pass out worksheet (see p.7:10). Have children read the riddles and jokes and then draw the two possible meanings. Then, have them circle the inferential meaning--the intended message.

7. Summarize and tell the children to be sure they check for all the possible meanings in their reading during the week. If they ask themselves the key questions, they should check their names.

Materials

1. Poem by H.L. Johnson, In Hello Small Sparrow. New York: Lothrop, Lee, & Shepard Co., 1974. (on Worksheet 1)

Module 7: Lesson 2

"INFER THE HIDDEN MEANING"

Goals

Children will be able to use text to make inferences from text that involve:

1. Implied antecedants
2. Implied consequences
3. Implied reactions

Bulletin Board Questions

1. What happened before?
2. What happened next?
3. How did they feel?

Procedures

1. Review "infer," "inference," and "inferential."
2. "Whenever we read, we need to make inferences. Just reading what the words say is not enough."

   Read the new "hidden meanings" from the bulletin board.
3. Write a sentence on the board and ask the bulletin board questions about it.
   a. "Jerry's mother was very angry about the broken lamp."
   b. "The two cars sat in the middle of the road with their fenders smashed in."

   "How did you know the answers?" (It happened to me ....)
   "You use your experience, not just the words."
4. "Today you are going to read something, and you must make inferences in order to answer the questions."

   (Children are given the same story with two different titles. The first version is called "Space Trip to Another Planet" (p. 7:9) and the second version is entitled "Watching a Peace March from the Top Floor" (p.7:10).)

   (Hand out the two versions of the story and have the children read them.)

5. Discuss the stories and the discrepancies in the answers. "How did it happen that you got different answers when you both read the same story." Lead them to conclude that they thought differently because of the title. They used their knowledge to form inferences. "You each made inferences based on the title and arrived at different meanings."

6. Summarize and remind children to read for the inferences and check their name.

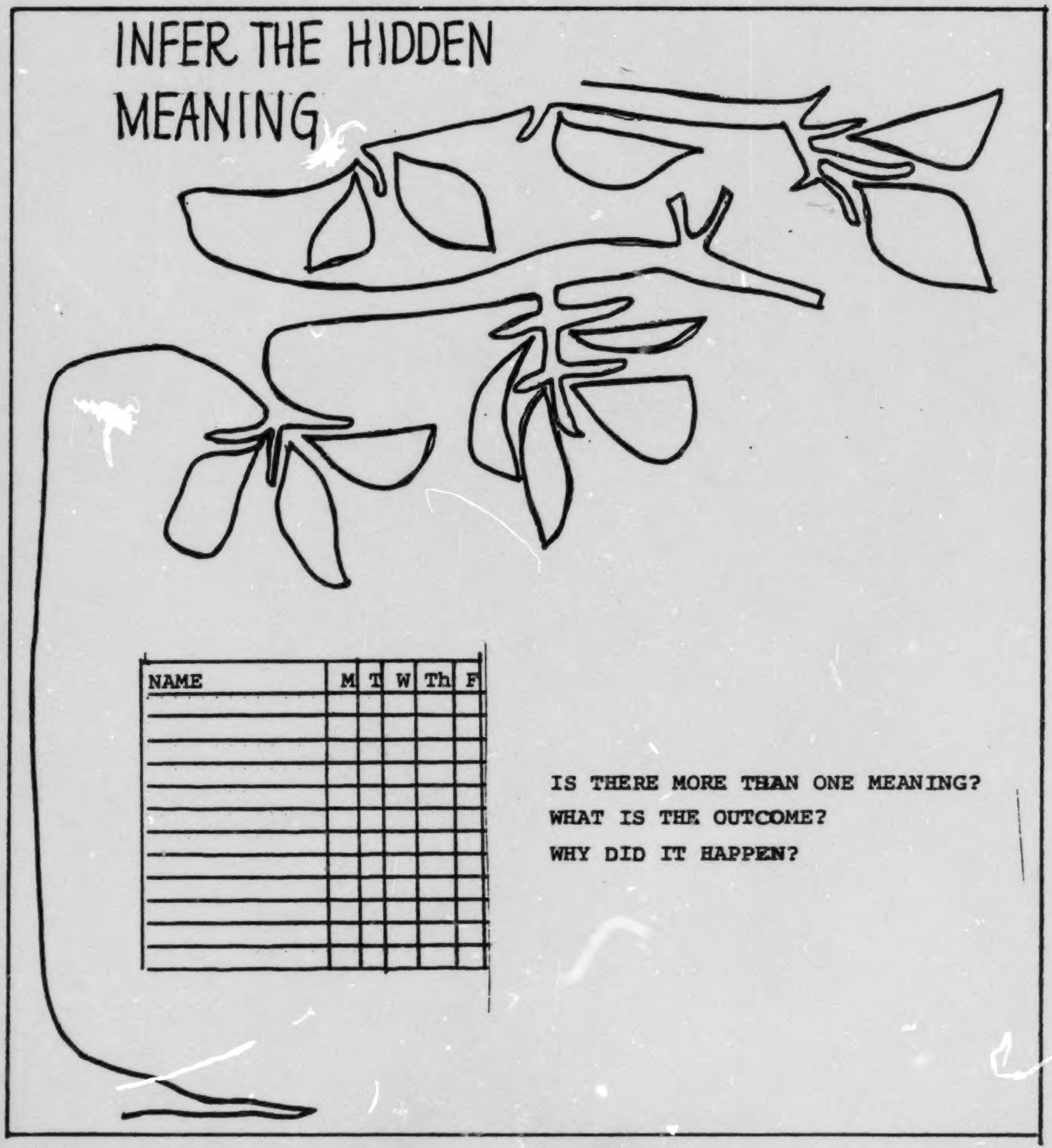
Materials

1. Watching a Peace March from the Top Floor

2. Space Trip to Another Planet

MODULE 7

BULLETIN BOARD


INFER THE HIDDEN MEANING

NAME	M	T	W	Th	F

IS THERE MORE THAN ONE MEANING?

WHAT IS THE OUTCOME?

WHY DID IT HAPPEN?

7:10
Module 7: Lesson 1
Worksheet 1

INFER THE HIDDEN MEANING

DIRECTIONS: Read the joke or riddle. Then draw two meanings for it.

1. Have you ever seen a "Batboy"?

2. After dinner, Mommy "toasted" Daddy!

3. Question: How do you make "anti-freeze"? Answer: Steal her blanket.

4. Have you ever seen a 14-carrot (carat) ring?

5. Read the poem. Then turn over your paper and draw a picture of what you understand from the poem.

Bright colored wool caps
Bob up and down
On hillsides
When sledding begins.

SPACE TRIP TO ANOTHER PLANET

The view was great. From the window I could see all the people below. Everything looked very small from so far away. But I could still see the colorful costumes. Everyone seemed to be moving in one direction. There were little children and adults. The landing was gentle. Luckily the air was all right so no special suits had to be worn. At first there was a lot of moving around. Later on, the speeches started. The crowd got quiet. The man with the TV camera took many shots of the setting and the people. Everyone was very friendly and seemed glad when the music started.

1. Where was the person in the story?
2. How did that person feel?
3. What happened before the beginning of the story?
4. What happened next?

WATCHING A PEACE MARCH FROM THE TOP FLOOR

The view was great. From the window I could see all the people below. Everything looked very small from so far away. But I could still see the colorful costumes. Everyone seemed to be moving in one direction. There were little children and adults. The landing was gentle. Luckily the air was all right so no special suits had to be worn. At first there was a lot of moving around. Later on, the speeches started. The crowd got quiet. The man with the TV camera took many shots of the setting and the people. Everyone was friendly and seemed glad when the music started.

1. Where was the person in the story?
2. How did that person feel?
3. What happened before the beginning of the story?
4. What happened next?

Module #8

Topic: SUMMARIZING MAIN POINTS Metaphor: "ROUND UP YOUR IDEAS"

Introduction

We often speak about the main idea in a paragraph or passage but usually there is not just one idea. There are, in fact, many thoughts that one could generate from a particular passage, ranging from literal comprehension to personal emotional reactions. We have emphasized the kinds of meaning and the inferential aspects of reading these past few weeks. We even discussed tracking down "the" main idea. Now is an appropriate time to tell children about summarizing because it combines abstraction of ideas, inferences, and various kinds of meaning constructed from passages.

Summaries of reading are important not just as written records for comprehension and composition skills, but also as checks on one's understanding and recall. Condensing and rehearsing the important pieces of information in a passage as a paraphrased unit facilitates memory tremendously.

Rationale

One reason for instructing children about summaries is to make them aware that thinking after reading can help comprehension and memory. We shall use the analogy of rounding up horses to illustrate the value in not "letting one slip away." Another reason for teaching children about summaries is that they often are unable to distinguish important from unimportant sentences in passages. We shall instruct them in identifying sequences of important information such as setting-actors-action-outcome-inferences (e.g., intentions, feelings, evaluation). Basically, the main ideas to be rounded up are the answers to familiar where-who-what-how-why kinds of questions. Children who can answer these questions (from their own self-initiated questions) are likely to be able to paraphrase and recall the information later. Such skills are certainly fundamental to written composition as well as reading.

Objectives

1. To teach children about the kinds of important ideas that need to be abstracted.
2. To teach children to identify, recognize, and list the important pieces of information (e.g., how, who, what, where, why).
3. To teach children to paraphrase and summarize the important ideas (including their own inferences, reactions, and evaluations).
4. To teach children that such active summarizing "in-the-head" or "on-paper" is a terrific way to make sure that the main points are understood and can be recalled.

Instructional Techniques

1. One of the traditional methods in reading instruction is to ask children Wh-questions about passages. You can do this after virtually any passage but it will help even more if you can:

    a. make children ask themselves the questions, and

    b. recall who-what-where, etc. as a unit or schema.

2. Another popular method is simply to ask children to listen to a story and retell it in their own words. Children need to learn to emphasize the main points and distinguish between relevant and irrelevant information. Retelling is a quick and easy check for comprehension during listening, oral reading, or group silent reading.

3. For individual seat work, you can ask the children to underline the 3 or 4 most important pieces of information in a passage. Underlining, checking, or mere recognition can be supplanted by rewriting and paraphrasing in better readers or older children.

4. Children often find it interesting to read other children's summaries (or to hear them read before the whole class). Such comparisons point out the similarities in "the main points" as well as the differences among children in what they find significant.

5. Another suggestion is to make up the best title, shortest summary, best summary, etc. and to compare them within reading groups with rewards for the best ones.

In all of these activities it is important for children to learn that summarizing is a good and necessary aid to comprehension and they should initiate it on their own all the time.

Connection to Bulletin Board Display

The bulletin board display will be a "corral of ideas" to show the importance of gathering all the kinds of important meanings together. The questions will be:

1. What's the title?

2. Who are the characters?

3. What is the action? the outcome? the setting?

4. Ask yourself who, what, why, where, when questions.

5. Can you say it is your own words?

6. Can you make a summary?

Module 8: Lesson 1

"ROUND UP YOUR IDEAS"

Objective

Children will be able to identify the main ideas and collect them in an oral or written summary.

Bulletin Board Questions

1. What is the title?
2. Who are the characters?
3. What is the action? the outcome? the setting?
4. Ask yourself who, what, when, where, and why questions.
5. Did you get the main idea?
6. Can you say it in your own words?
7. Can you make a summary?

Procedures

1. Read the new bulletin board.
2. "What do you think that means: 'Round Up Your Ideas'?"
3. "Why do cowboys round up their horses?" (So they don't get away.)
4. "This week we're going to find out how important it is not to let the ideas slip away."
5. Review: "What things do we have to track down to get the main idea?" (Who, what, where, when, why, how: the characters, action, setting, inferences and outcomes.)
6. "After you've identified (tracked down) the main ideas, inferences and judgements, you need to round them up into a summary. You can do this in your head or on paper."
7. "Let's see if we can do all this."
    a. 3rd graders:
        1) Read "Danger!" story together (p. 8:8).
        2) Think about who, what, where, when, why--discuss.

    3) Write these on the horse roundup sheet (p. 8:13).
    4) Have someone say a summary. Everyone else listens to see if anything is missing. "Remember a summary is short and only contains the important information."

  b. 5th graders:
    1) Read the story silently, "Amelia and the Bear" (p. 8:10).
    2) Write a summary which includes the elements above. Change papers and help with information that was left out.

8. Summary: Refer to the focal questions on the board and remind children to use summaries so that:

  a. it will help them to remember information

  b. none of the important ideas will get away.

Materials

1. Danger!

2. Amelia and the Bear

Module 8: Lesson 2

"ROUND UP YOUR IDEAS"

Objective

Children will be able to identify the main ideas and collect them in an oral or written summary.

Bulletin Board Questions

1. What is the title?
2. Who are the characters?
3. What is the action? the outcome? the setting?
4. Ask yourself who, what, when, where, and why questions.
5. Did you get the main idea?
6. Can you say it in your own words?
7. Can you make a summary?

Procedures

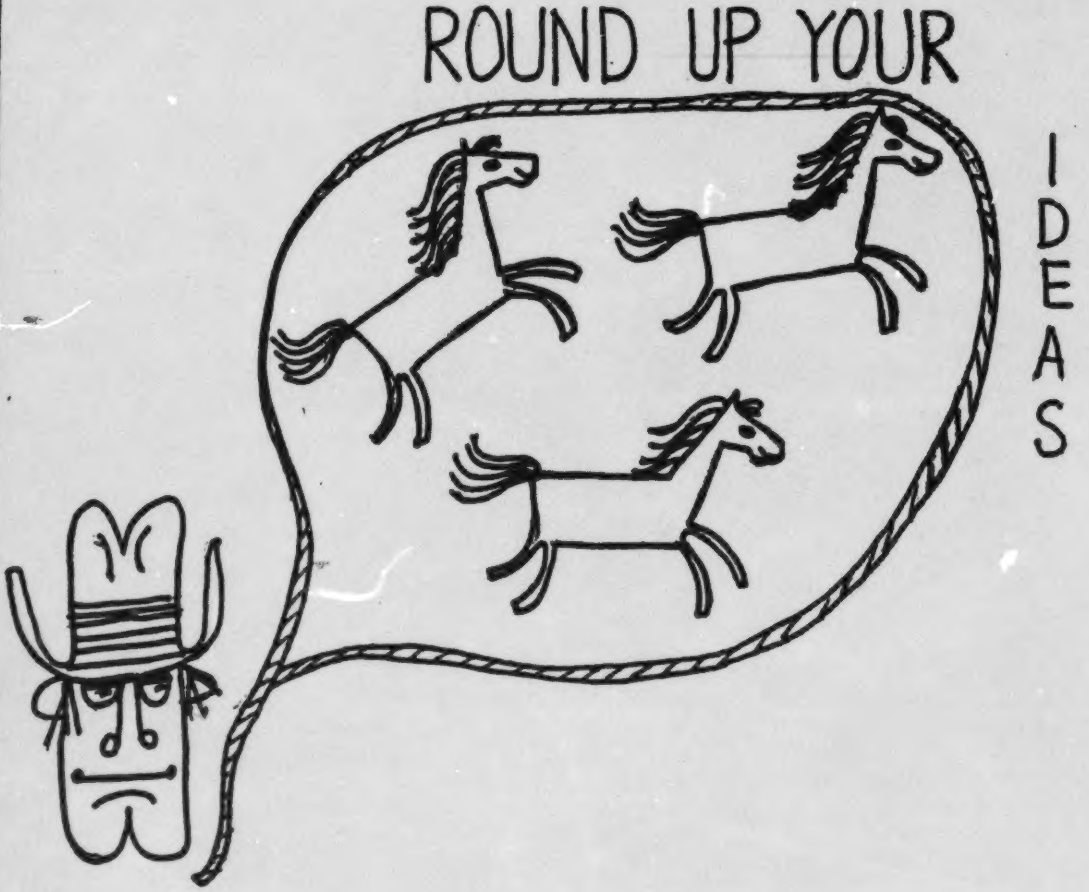
1. Review Lesson 1 with careful attention to the value of summary:
    a. it helps you remember
    b. you must concentrate on only the important facts.
2. "Today we're going to see how well we can write summaries."
    a. 3rd grade:
        1) Children read "Amelia and the Bear"--silently to selves or aloud, together.
        2) Identify who, what, where, when, why on horses roundup sheet.
        3) Children compose oral summary and give it in the front of class. Have several children do so, and clarify what was good about each.
    b. 5th grade:
        1) Children read "Danger!" silently.
        2) Children write a summary on a summary sheet.

    3) Read aloud several summaries, and comment on the positive qualities of each.

3. Summarize the week's lesson. Read the questions from the bulletin board.

MODULE 8

BULLETIN BOARD



NAME	M	T	W	T	F

WHAT'S THE TITLE?
WHO ARE THE CHARACTERS?
WHAT IS THE ACTION, THE OUTCOME, THE SETTING?
ASK YOURSELF WHO, WHAT, WHERE, WHEN QUESTIONS.
CAN YOU SAY IT IN YOUR OWN WORDS?
CAN YOU MAKE A SUMMARY?

8:8
Module 8: Lesson 1 or 2
Selection 1

DANGER!

Andy Baker ran through the pasture and down toward the pond. He went there every day after school to play with Nitwit. For Andy, these hours with his colt were the best hours of the day.

Andy slowed down and then stopped. Something was wrong. The colt was usually waiting for him, but today Nitwit was nowhere in sight. "Nitwit," Andy called. "Hey Nitwit."

A frightened sound answered him. When Andy heard it, his heart began to pound. The sound came from the swamp. He started to run.

As Andy dashed toward the swamp, he came to the barbed-wire fence that had been put up to keep Nitwit in the pasture. Andy saw that a tree branch had fallen down and pushed the fence to the ground. Nitwit had been able to step right over the fence.

"If only Duchess had been here," Andy said to himself. "Nitwit's mother would have watched her colt and kept him out of the swamp."

Andy reached the swamp. He heard the frightened colt again. "I'll get you out Nitwit," he called. But his heart sank. Andy knew the dangers of the swamp. It has many mud-filled holes. If Nitwit ever stepped into one of them, his young legs would go down fast. He might even break a leg trying to get free.

Andy took another careful step. The ground seemed ok. But when he let his whole weight down on his foot, his leg sank into mud up to his knee. "I'll have to go for help," he called as he slowly lifted his leg from the mud. But he didn't want to leave Nitwit. He could see that the colt was nervous, but getting help was the only way to save him.

Andy was out of breath when he dashed into the barn. He couldn't waste a minute. Maybe even now it was too late. Nitwit's mother, Duchess, was standing quietly in her stall. Andy grabbed the rope.

"Duchess" he cried out. "Your colt's in the swamp. You know the swamp. You've been in and out a hundred times. Dad told me himself he feels safe when you're with him in the swamp." Andy led Duchess out of the barn and slid onto her back.

It seemed to take forever to reach the swamp. "Nitwit" Andy called as loudly as he could. When the colt's cry came back to them, Duchess's ears went up. She heard the cry of her colt and knew that he was in some kind of trouble.

Then Duchess started into the swamp. Andy let her find her own way into the swamp. She knew where she was going. She knew where it was safe to walk and where the danger was.

Suddenly the colt's cry was very close. Duchess came to a stop. Andy stared and felt very sad. Nitwit's back was just about covered with the cold mud. The colt was stuck deep in the mud. "Take it easy, Nitwit," Andy said softly. "We'll get you out of there."

Andy looped one end of the rope. He looked carefully and then threw the loop around the colt's head. Then he tied the other end of the rope around Duchess's neck. "The rest is up to you. Back, Duchess, back," he yelled, pulling the reins.

Duchess slowly pulled. Step by step Nitwit was pulled from the mud. At last he found footing on solid ground.

"You're free." Andy cried. "Thank goodness." He dropped to his knees and hugged the shrivering colt. Then he turned to Duchess and hugged her too. "You wonderful horse!"

AMELIA AND THE BEAR

Amelia Thompson sat on a log bench outside the cabin. The warm June sun felt good on her face. Amelia was peeling potatoes for dinner. She looked up as her parents came out of the cabin.

"Be sure to put the potatoes on to cook," said her mother. "You and Eli may have a few for lunch."

"Yes, Mama."

"Oh, Antone, I wish we had gifts for Mr. Jacobs," her mother said to her father. "He has given us so much."

"Philip Jacobs understands," Mr. Thompson said. "Besides, our corn crop will be ready next month. We will share it with him. That late freeze killed most of his corn." He turned to Amelia. "We will be back before dark."

Amelia watched her parents go down the path to Mr. Jacob's place. She went back to her peeling. When her family came to America in 1848, Amelia was just six. Now, four years later, the Thompsons were settlers in the Wisconsin wilderness. If it hadn't been for Philip Jacobs, what would they have done?

She looked at their half-grown pig in his strong log pen. Amelia remembered the day Mr. Jacobs had brought the little pig to them. He had told them that, with good care, the meat from the pig would last them all winter. Mama had kept the small piglet near the fireplace all spring and had fed him potato-peeling soup.

Amelia put a potato in the pot. Then she looked at the pig. It pushed its snout between the logs and grunted. "I know you don't like being in that pen," Amelia said. "But we can't turn you out. Bears and wolves might get you."

Amelia went into the cabin. She thought of the bacon and pork chops they would have in a few months. A strange scratching noise made her stop and listen. Suddenly there was a shrill squeal. Out the window, she saw the pig pushing against the side of the pen. His snout was between the logs and his small round eyes were rolled back in fear. Then she saw it! On the far side of the pen, a black bear had pushed a paw between the logs. He was reaching for the pig with his long, sharp claws. Amelia shook with fear as she watched the pig run back and forth. Suddenly her fear changed to anger. "No! You can't have our pig!" she shouted.

She started outside, then stopped and looked around. Papa had taken the rifle, but a long, sharp pointed stick standing near the door caught her eye. The corn planter!

Amelia grabbed the pole and ran outside. She crawled toward the pen on her hands and knees. The bear reared on its hind legs and pawed the air. She lay still and watched. Had it seen her? Her heart pounded.

At last, Amelia reached the pen. She crept close until the pig's snout was just above her. His shrill squeals made her head hurt as she peeked around the corner. The bear's shaggy black legs were less than three feet away!

Amelia held the pole tighter but couldn't make herself move. Suddenly chips of wood fell on her. The bear had broken through the pen! Amelia jumped up screaming.

"Pig stealer!" she cried. Then she pushed the pole at the bear with all her strength. The sharp point jabbed into the bear's thick hide.

With a mighty growl the bear reared up, turned toward the woods, and ran off. Amelia leaned against the pen, sighing with relief.

"Amelia! Amelia! Where are you?" her father called as he came running through the woods from the bay.

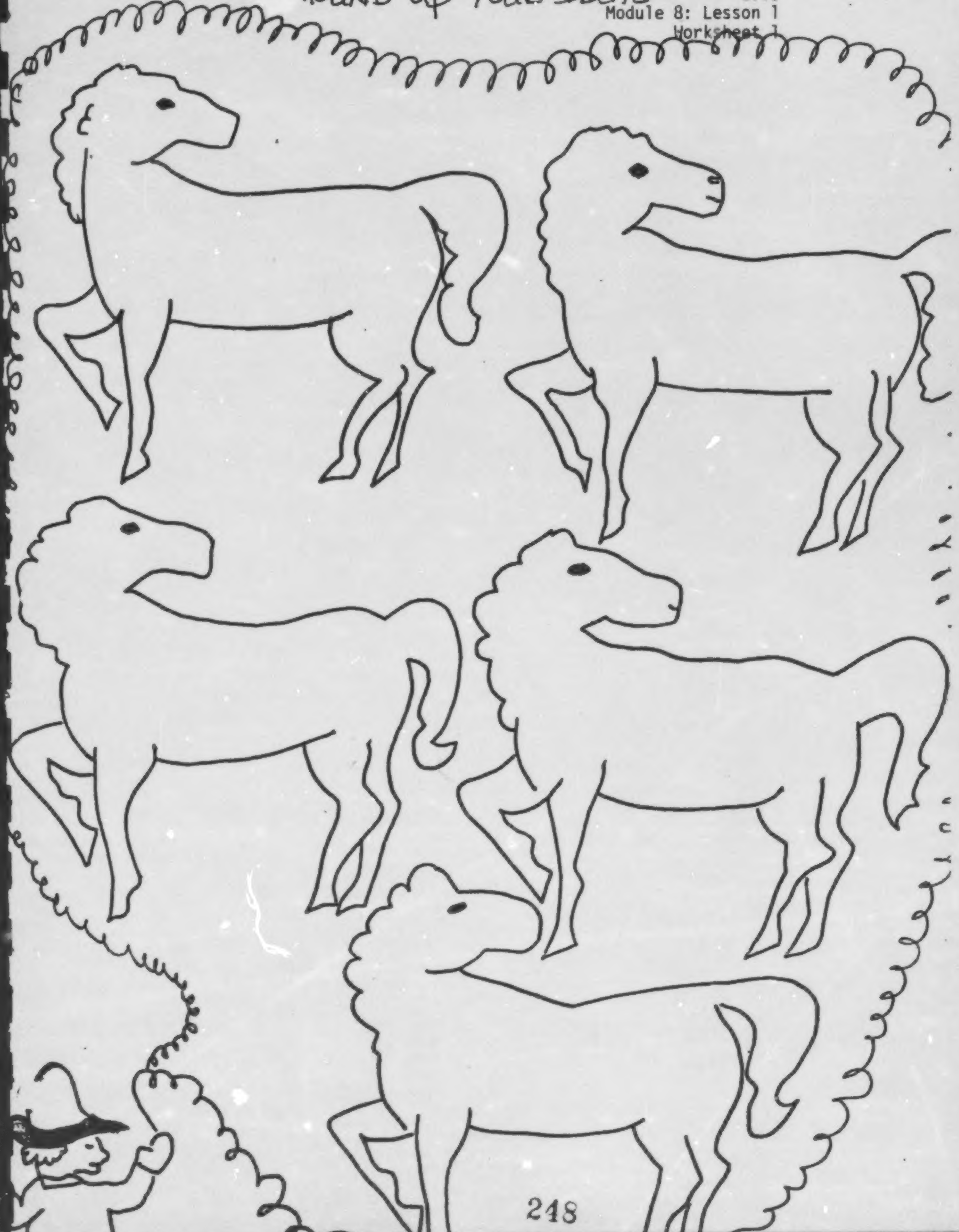
"Bear!" she gasped, pointing to where it had gone into the woods. With the rifle ready, her father ran into the woods after the bear. The next thing Amelia knew, her mother was hugging her. Eli said, "Wow! you really fought off a bear?"

For supper that night they had bear meat with their potatoes. Amelia's father told how he had caught the bear. "It wasn't badly hurt, but you scared it half to death," Mr. Thompson said.

"And now we can surely survive the winter," Papa said. His proud smile made Amelia feel good.

ROUND UP YOUR IDEAS

8:13
Module 8: Lesson 1
Worksheet 1



8:14
Module 8: Lesson 2
Worksheet 1

ROUND UP YOUR IDEAS

Module #9

Topic: CRITICAL EVALUATION Metaphor: "JUDGE YOUR READING"

Introduction

As adults we often choose to read. We decide when, what, how, and why we read different kinds of material. Children, on the other hand, often regard reading as a school task in which choices are few. Topics such as declaring a reading goal, getting the main idea, and inferring the meaning are our attempts to stimulate children to choose good plans and strategies for reading. Our emphasis has been that reading is not passive, nor is meaning "out there" to be absorbed. Instead, children need to evaluate their understanding, make reading plans, and use comprehension strategies.

The lessons this week continue the constructive emphasis by focussing on critical reading. The essence of being a "reading critic" is to measure the passage against a variety of criteria (e.g., Was it fun to read, easy to read, difficult to understand, etc.?) Clearly these kinds of judgements go far beyond literal interpretations of prose and they require purposes, goals and inferences of the reader to be coordinated with textual evaluations. This week we shall tell children how to measure or judge information that they read. Further, we want to emphasize that thinking about the author's purpose and the reader's goal is important for evaluating full comprehension of the passage.

Rationale

Young children are often unaware of the existence of, or need for, critical evaluations of reading (or thinking after decoding generally). Again we are trying a little "consciousness raising" about reading, but are also showing children how to judge their comprehension. If children understand that they can and should evaluate the difficulty, enjoyment, author, and themselves after reading, they may begin to do it spontaneously. Of course, we need to emphasize that being a good critic usually promotes better understanding and memory too.

Objectives

1. To stimulate children to criticize a passage after reading it.
2. To inform children of several dimensions or criteria for their judgements.
3. To fit the critical evaluations to the reader's and author's goals.
4. To illustrate again the many kinds of explicit and implicit meaning that can be acquired through reading.

Instructional Techniques

1. When children read advertisements, poetry, reports, mysteries, etc., ask them to consider what the author was trying to communicate. Why were particular words used? Did the passage contain lots of hidden meanings? Try to prompt children to think about the author's intentions and goals.

2. Ask children if a passage met their reading goals. (This is a nice way to reintroduce goal-declaration too.) Was it too hard, too easy, too long, too boring, etc.? Probe deeper to find out how the reading differed from their expectations. Was it more exciting, or less so, than they thought it would be?

3. After reading, discuss what parts of the passage were difficult to understand. Discuss incomprehensible sentences as well as vocabulary words. Ask why the passage was difficult and evaluate the source of the problem (e.g., word meaning, idioms, inferences, erroneous reference).

4. Provide a list of criteria for a passage or story and have children make judgements and write their reasons. For example, after reading a verse or story, they could be given a set of questions to answer similar to the ones on the bulletin board (see list below).

Connections to the Bulletin Board Display

The bulletin board will show a "judge" and list questions about evaluating one's reading. They are:

1. Is it interesting?
2. Is it clear?
3. Is it believable?
4. Is it fact or fiction or opinion?
5. Why did the author write it?
6. Did the author do a good job?
7. Did it meet your needs?
8. Did you enjoy it?
9. Did it answer your questions?

References

Baker, L., & Brown, A. L. Metacognitive skills of reading. In D. Pearson (Ed.), Handbook of reading research, 1981.

Brown, A. L. Metacognitive development and reading. In R. J. Spiro, B. C. Bruce, and W. F. Brewer (Eds.), Theoretical issues in reading comprehension. Hillsdale, New Jersey: Erlbaum, 1980.

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Module 9: Lesson 1

"JUDGE YOUR READING"

Objectives

Children will be able to make evaluative judgements about what they are reading (personal assessments), based on the focal questions.

Bulletin Board Questions

1. What kind of reading is it: fact, fiction, opinion?
2. Why did the author write it?
3. Is it believable?
4. Is it interesting?

Procedures

1. Read the bulletin board with the children.
2. Discuss what a judge does. Elicit from children that a judge makes decisions based on a criterion. Help children to see that they need to know what they are looking for before they can make judgements.
3. Read the focal questions. "These are the things that we have to answer before we can judge our reading."
4. "Today we are going to do some reading and come up with a verdict about the reading. Who can tell me what a verdict is?" If no one can, then be sure they know that it is the final decision the judge makes about a crime. Our verdict will be our decision about our reading.
5. Do the attached worksheet (p. 9:10), with the three types of reading. The selections are: Blaparoni and Glint (p. 9:6), The Popcorn Blizzard (p. 9:7), and "Hans the Clever Horse" (p. 9:8).
6. Summarize the notions behind judgements and encourage children to check their names.

Materials

1. "The Popcorn Blizzard," by Dell J. McCormick in Adventures Here & There, grade 5, Betts Basic Readers, 3rd Ed., American Book Company, 1963, pp. 373-379 (Teachers Edition).
2. "Hans the Clever Horse," by Helen Kay, in Ideas & Images, grade 3-2, the READ series, American Book Company, 1968, pp. 261-268.

Materials

3. "Blaparoni" and "Glint," by A. McKay, J. MacKenzie, & C. Spiegler. In What Does it All Mean?, Second Bood. Menlo Park, CA: Addison-Wesley Publishing Co., 1973, pp. 47-50.

Module 9: Lesson 2

"JUDGE YOUR READING"

Objectives

Children will be able to judge the quality of what they have read, using the focal questions.

Bulletin Board Questions

1. Is this fact, fiction, or opinion?
2. Why did the author write it?
3. Did the author do a good job?
    a. Is it interesting?
    b. Is it believable?
    c. Is it clear?
4. Would you have done anything differently?

Procedures

1. Remind children of weekly theme. Reread the focal questions from the bulletin board.
2. Remind children what a verdict is. "Today we are going to make some more decisions about our reading."
3. Do worksheet entitled "The Verdict Is ..." using the two attached stories. (The Kappa, p. 9:9; The Kiwi, p. 9:10)
4. Tell children that it is important to decide why they are reading first (just as a judge must decide what the crime is before he decides the verdict).

    "You can't judge a mystery read for fun the same way that you judge non-fiction."
5. Summarize and remind the children to ask themselves these questions during their reading.

Materials

1. "The Kappa," by H. Jacobson. In The First Book of Mythical Beasts. New York: Franklin Watts, Inc., 1960, p. 42.
2. "The Kim," by D.E. Shuttlesworth. Adapted from The Wildlife of Australia and New Zealand. New York: Hastings House Publishers, 1967.

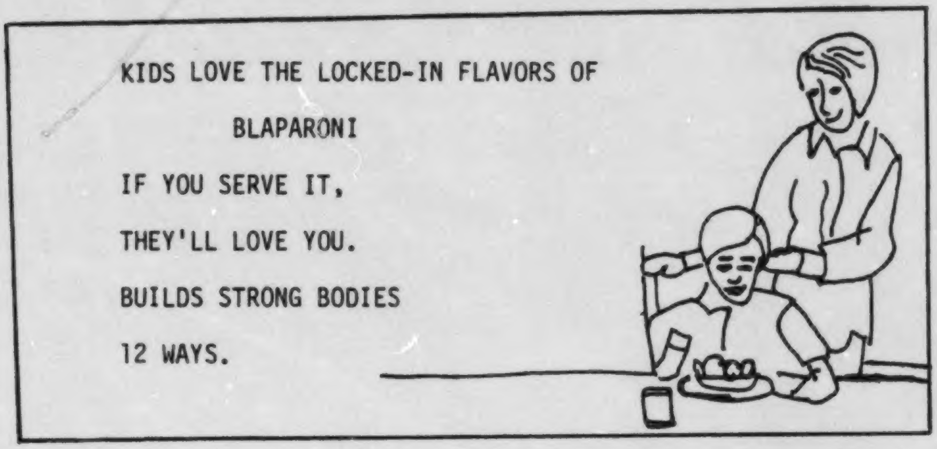
MODULE 9

BULLETIN BOARD

JUDGE
YOUR READING

1. IS IT INTERESTING?
2. IS IT CLEAR?
3. IS IT BELIEVABLE?
4. IS IT FACT OR FICTION OR
5. WHY DID THE AUTHOR WRITE IT?
6. DID THE AUTHOR DO A GOOD JOB?
7. DID IT MEET YOUR NEEDS?
   - DID IT ANSWER YOUR QUESTIONS?
   - DID YOU ENJOY IT?

NAME	M	T	W	Th	F



KIDS LOVE THE LOCKED-IN FLAVORS OF

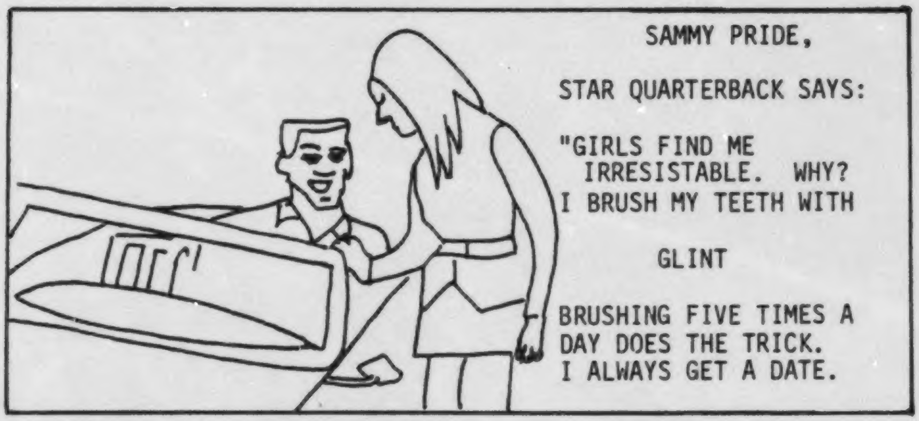
BLAPARONI

IF YOU SERVE IT,

THEY'LL LOVE YOU.

BUILDS STRONG BODIES

12 WAYS.



SAMMY PRIDE,

STAR QUARTERBACK SAYS:

"GIRLS FIND ME
IRRESISTABLE. WHY?
I BRUSH MY TEETH WITH

GLINT

BRUSHING FIVE TIMES A
DAY DOES THE TRICK.
I ALWAYS GET A DATE.

THE POPCORN BLIZZARD

Old Paul was what they called him, and he was the best logging man anybody ever saw. Paul Bunyan could cut down more trees in a day than a whole camp full of loggers could in a month.

Well, one time when Old Paul had cut down all the trees around his camp in the northern woods, he decided to go out west. It was a long, hot trip, but that wouldn't stop Paul Bunyan.

Paul and the other loggers started on their trip. Of course, Babe the Blue Ox--he was Paul's pet--went along too. In a few days there was sand all around them. The sun grew hot and the heat grew even hotter. There wasn't a tree to be seen on the desert. There wasn't any shade for miles around.

The men began to get very tired and unhappy. At last the men said they would not go on. Paul had to think of what to do.

That night Paul went into the mountains. He found a farmer with a whole barnful of corn. Paul bought all of it and put the whole barn full on Babe's back.

When Paul and Babe got back to the desert where the men were resting, the sun was shining overhead. Soon the sun was so hot that the kernels of corn started to pop. They shot up into the air from Babe's back and then fell to the ground. Soon the land was white with popcorn as far as you could see.

"A snowstorm," the men yelled. They ran to get their mittens and coats. They ran around in the popcorn for hours, having a great time. They made popcorn balls and threw them at each other. Everybody forgot how terrible the heat had been the day before.

HANS THE CLEVER HORSE

Once there was a horse named Hans, and he was very wise. The whole world heard about him because he could spell and do arithmetic. Everyone who saw him do these things was sure about it.

Hans couldn't speak of course. He answered questions by moving his head for "yes" and "no." He tapped the ground to answer arithmetic problems. And to spell words, he would make one tap for "A," two taps for "B," and so on.

His master in Germany was Herr von Osten and he was very proud of Hans. Herr von Osten believed that horses could learn just like people. He thought that all they needed was a good teacher. It took him two years to teach Hans. He would hold the horse's leg and tap the ground with it while he counted out loud.

For two long years Herr von Osten did this over and over. Slowly Hans learned when to stop tapping in answer to each question. His master no longer needed to move the horse's leg. He would just call out a letter and the horse would tap the right number of times. Herr von Osten always rewarded him with a lump of sugar.

Everyone came to see the wise horse. One day, professors from the university came. They thought it must be some sort of trick. They asked Hans questions, but every time Hans gave the right answer. How did he do it?

Each time a professor asked a question, Hans got the right answer. They all agreed that it was not a trick.

But one of the professors, Dr. Pfungst, did not think so. Something bothered him--he didn't know what. Then he had an idea.

Hans (page two)

Dr. Pfungst thought that Hans might be getting some signal from him--a signal that the professor himself did not know about. So, he stepped behind a screen. Then he asked Hans a question from behind it. The horse could hear him, but he could not see him.

Hans began to tap. He tapped and tapped and tapped. He didn't know when to stop. He couldn't give a correct answer to any question.

The secret was out. Hans was a very clever horse, but he was not a thinking horse. He didn't know the answers, he must have just tapped until he saw some sign that told him to stop.

THE KAPPA

In Japan there is a strange little creature that lives in the lakes and the rivers. It is called a kappa. That means "river child" in Japanese. The kappa has the body of a turtle, the feet of a frog, and the head of a monkey.

The head of a kappa is special. It has a hole on the top of the head. The hole is filled with liquid. This liquid gives the monster strength. He is so strong that he can drag men into its water home. This strange little animal attacks people and eats them.

There is only one way to get away from a kappa and keep from getting eaten. If you meet one, you must be very polite. You must bow to the ground. Because the kappa is very polite also, he will bow down when you do. As it bows, the liquid inside its head will come out and it will get very weak. Then it is easy to escape from the kappa.

THE KIWI

Everyone in New Zealand knows the kiwi. Its picture is on New Zealand's money and on its stamps. Today that is just about the only place you can see one.

Things were not always this way. For many years there were lots of kiwis in New Zealand. But people hunted them for their feathers. Also, people brought cats and dogs to the island. These animals hunted the kiwis and ate their eggs.

The kiwi sleeps during the day and moves around at night. It is a very good fighter. Because of these things, the kiwi has not died out completely.

In many ways, the kiwi does not seem to be a bird. It has hardly any wings and its feathers are more like hair. It cannot fly. The kiwi lays only one egg at a time. After the egg has been laid, it is the male kiwi who stays on the nest. He sits on the egg and doesn't leave--not even to get food or water.

These strange birds are almost extinct.

THE

VERDICT IS ....

I.

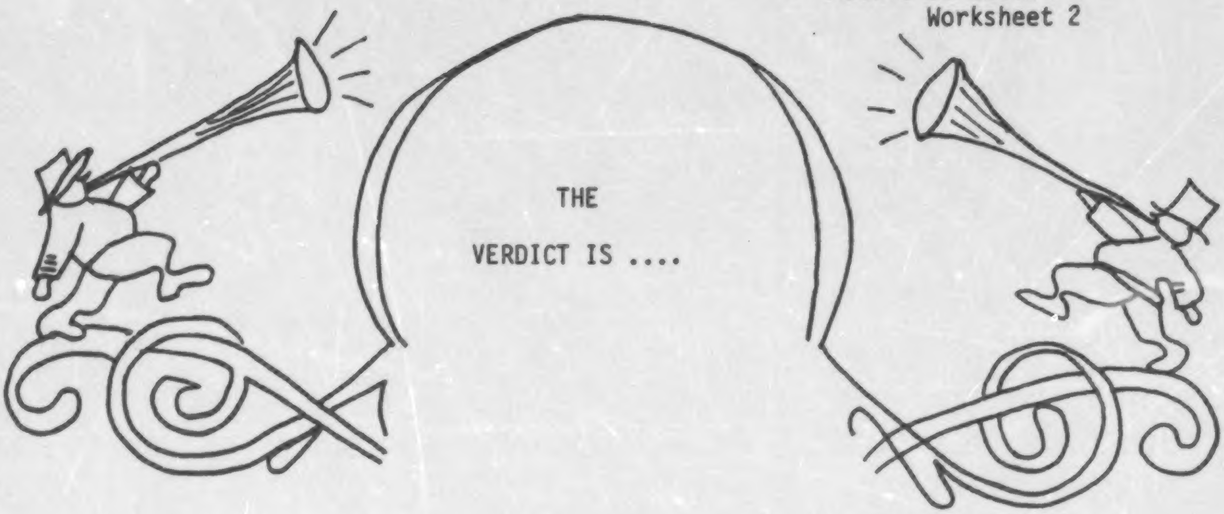
1. Is this fact, fiction, or opinion?
2. Why do you think the author wrote this?
3. Was it interesting? believable?

II.

1. Is this fact, fiction, or opinion?
2. Why do you think the author wrote this?
3. Is it believable? interesting?

III.

1. Is the reading fact, fiction, or opinion?
2. Why do you think the author wrote it?
3. Was it interesting? believable?



THE VERDICT IS ....

I.

1. Is this fact, fiction, or opinion?
2. Why did the author write it?
3. Did the author do a good job?
    a. Is it interesting?
    b. Is it believable?
    c. Is it clear?
    d. Would you have done anything different?

II.

1. Is this fact, fiction, or opinion?
2. Why did the author write it?
3. Did the author do a good job?
    a. Is it interesting?
    b. Is it believable?
    c. Is it clear?
    d. Would you have done anything different?

Module #10

Topic: COMPREHENSION MONITORING Metaphor: "ROAD TO READING DISASTER"

Introduction

We have discussed many strategies and plans that children can use to focus on the main points while reading. So far we haven't emphasized the pitfalls of not using good comprehension skills. The emphasis this week is on comprehension monitoring, more specifically, on recognizing when something does not make sense when it is read. Certainly comprehension can be reduced when words are misspelled, missing, or unknown, and the failure to notice and correct these errors might lead to confusion. There are more subtle sources of error too, such as ambiguous referents, incorrect pronouns, illogical inferences, contradictions, etc. Before we can expect children to correct their reading errors (due to pronounciation, grammar, or meaning), we must insure that they realize the dire consequences for comprehension of skipping or not resolving the difficult parts of a passage. The "road to reading disaster" is intended to emphasize the pitfalls of not using strategies to check on one's own understanding of the passage meaning.

Rationale

The basic justification for this module is that children need to attend to the difference between what they do and do not understand if they are to overcome their limited comprehension. Another way of saying this is that we cannot improve our performance until we know what it is we need to learn or improve upon. This is the focus of contemporary research on comprehension monitoring. For example, Ellen Markman at Stanford University asked 10-12 year olds to read stories that contained blatant contradictions. One story, for example, described how there was no light in the deepest parts of the ocean, yet fish distinguished foods by color. Most children did not recognize the contradiction until it was pointed out to them! Other research also suggests that children do not ordinarily check the consistency of meaning within stories and are often content to skip words and phrases and construct an incomplete and fuzzy understanding of the passage. Good reading skills require self-controlled comprehension checking, and we believe it should be taught directly.

Objectives

1. To teach the pitfalls of not checking the meaning.
2. To recapitulate the importance of periodic pauses, paraphrasing, and rereading.
3. To provide practice with identifying non-comprehensible words and phrases.
4. To provide practice with recognizing semantic incongruities of reference and contradiction.

Instructional Techniques

1. Most teachers act as the "comprehension monitors" for children. As children read orally or silently, teachers ask questions about vocabulary, idioms, or implications. Although this is important, the teacher's help or "looking back" in the passage may become a crutch. Try explicitly to teach children the value of monitoring meaning on their own while reading. Remind them of strategies they might use to check meaning before and after they read.

2. Worksheets can be prepared easily that contain different kinds of errors. You can deliberately misspell words and scramble phrases. For older children, you can alter stories slightly to provide inconsistencies, either explicit or implied, that must be located and corrected. Contests or games can be used to determine who gound the most errors.

Connections to Bulletin Board Display

The bulletin board will depict a car traveling on a road sprinkled with reading signs and disasters (e.g., failure to obey a stop sign results in a crash). The questions for the week are:

Do I know all the words?

Do they make sense?

Do the sentences fit together?

Did I check the meaning everywhere?

References

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Module 10: Lesson 1

"ROAD TO READING DISASTER"

Goal

Children will recognize failures to comprehend. They will identify the possible "reading disasters" that may result from failure to do the things we've talked about in these reading sessions.

Bulletin Board Questions

1. Do I know all the words?
2. Do they make sense?
3. Do the sentences fit together?
4. Did I check the meaning everywhere?

Procedures

1. Read the bulletin board.
2. Discuss what it means.
3. Say, "In our reading sessions together, we've been talking about the things you should do before and while you're reading. But what happens if you don't do these things? Does it matter?" (Elicit: You'll be on the road to reading disaster ...)
    a. If you don't think about the words, it'll be a bumpy trip.
    b. If you don't look up or find out about unknown words, you'll crash.
    c. If you don't pay attention to the meaning and where you're going, you'll get lost.
4. "Today I want to see if you can pay attention; to see if you can avoid the road to reading disaster."
5. Do the attached worksheets. (see pp. 10:6 and 10:7)

    Directions: As you read along, underline any words, sentences, or parts of sentences that don't make sense.
6. Have the children silently read and underline. Then have a group discussion talking about what words they didn't know, and how they were able to get the meaning. Discuss the syntax errors.
7. Summary: "So, you have to pay attention to the meaning, or you'll get on the 'Road to Reading Disaster.'"

Module 10: Lesson 2

"ROAD TO READING DISASTER"

Goals

Children will be able to recognize contradictions they read in the text.

Bulletin Board Questions

1. Do all the sentences make sense?
2. Do the sentences fit together?

Procedures

1. Review Monday's session, especially the need to pay attention and get meaning, in order to avoid the reading disaster. Refer to the bulletin board.
2. "On Monday we read stories that had hard words. There were also some mixed-up sentences. In real reading there are usually not mixed-up sentences, but there are times when the meaning is not clear."
3. "Today, we are going to read some stories. We are going to concentrate on two questions." Read the two focal questions off the board.
4. Have the children do the "Snakes" and "Pigeons" passages, one at a time. Tell them to underline any sentences that don't make sense or that don't fit together.
5. After the group has done one, have them share the inconsistencies they found in the stories. Have the children explain why certain phrases are inconsistent.
6. Repeat with the second sheet, discussing the contradictions in the story.
7. Review the week's work by focusing on the need to recognize when you are understanding what you are reading (when the words make sense) and when you are not understanding (when the words do not make sense).

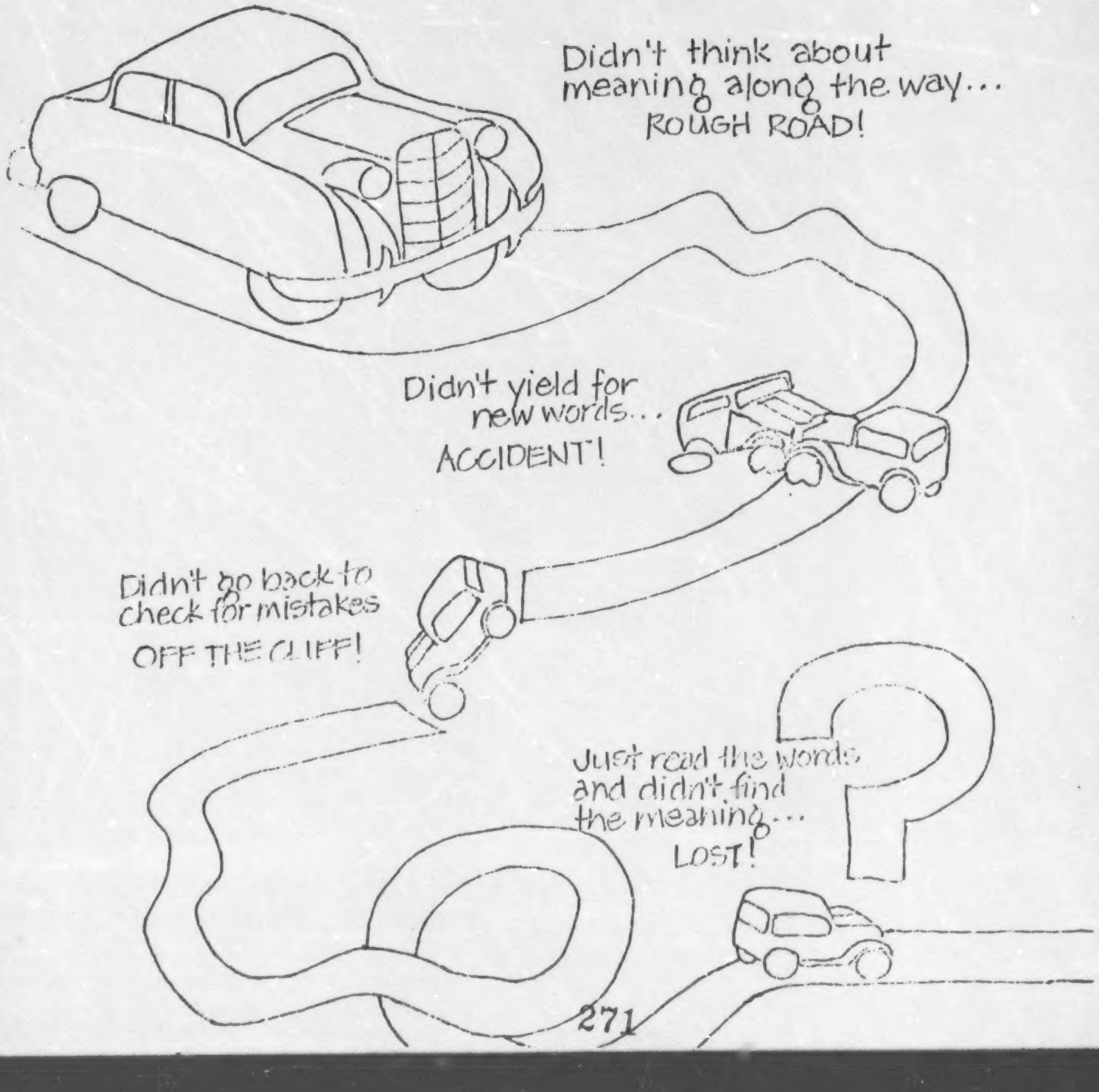
Materials

1. Snakes
2. Pigeons

MODULE 10

BULLETIN BOARD

THE ROAD TO READING DISASTER

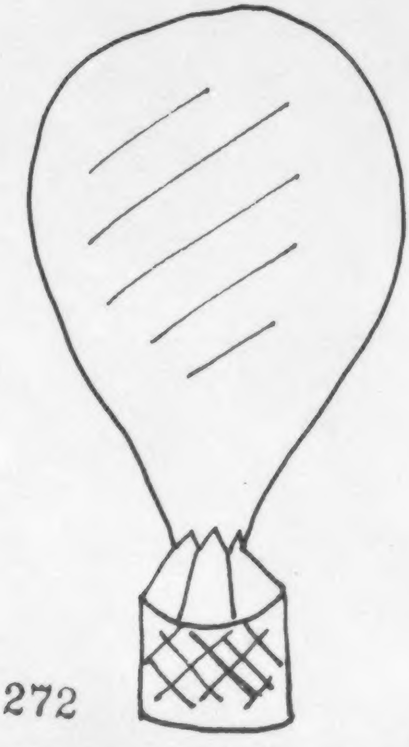

Didn't think about meaning along the way... ROUGH ROAD!
Didn't yield for new words... ACCIDENT!
Didn't go back to check for mistakes OFF THE CLIFF!
Just read the words and didn't find the meaning... LOST!

Ballooning

The first aircraft that man invented was the balloon. The first balloon was sent into the air by experimenters in France in 1783. He was a large bag made of paper and went about 6,000 feet into the air. It had been filled with hot air and smoke from a fire made by burning straw. A balloon rises to the air because it is filled with helium that is lighter than the air outside.

Some that balloons propeller carry turn a engine, which drives them through the air. This type of balloon can be driven by a pilot and is called a dirigible.

For quite a long period of time, airships were used to carry passengers. Because airships are rather slow and often dangerous, transportation very little they for now are. Many people still enjoy riding in balloons as a sport because it is so thrilling.



Source: Ekwall Reading Inventory, Boston: Allyn & Bacon, Inc., 1979, p. 45.

Caves

Some people enjoy exploring the many caves in this country. They can be a lot of fun but it can also be dangerous because you might get lost. Many spelunkers have been lost in caves because they did not know what to do to find their way out.

One thing that people who explore caves often take with them is a ball of string. The string is important because it keeps her from getting lost. They tie one end of the string to a stake outside the cave and unroll the string as they walk along. Way when they this leave cave to want the, all they have to do to find their way out is to follow the string.

Some caves may look small at the opening, but when you get inside there may be many giant caverns in them. Largest Mammoth one known caves Kentucky of world the cave in the is Cave. It has enormous caves, and underground rivers, and may take up as much space as 78 square miles.

Source: Ekwall Reading Inventory,
Boston: Allyn & Bacon,
Inc., 1979, p. 42.

Module 10: Lesson 2
Selection 3

Snakes E

There are many different kinds of snakes. Some snakes are 8 feet long and very fat. Some snakes are only 6 inches long and very skinny. Some snakes have a poisonous bite, but some snakes are harmless and even help us. The garden snake, for example, helps us by keeping bad insects away from our gardens. Garden snakes eat these insects. They find the insects by listening for them. The insects make a special noise. Garden snakes do not have ears. They cannot hear the insects. They can hear the sounds of the insects. That is how they are always able to find the insects.

Snakes I

There are many different kinds of snakes. Some snakes are 8 feet long and very fat. Some snakes are only 6 inches long and very skinny. Some snakes have a poisonous bite, but some snakes are harmless and even help us. The garden snake, for example, helps us by keeping bad insects away from our gardens. Garden snakes eat these insects. They find the insects by listening for them. The insects make a special noise. Garden snakes do not have ears. They can always catch plenty of insects. That is how they are able to help us keep our gardens free of insects.

Pigeons I

Homing pigeons are birds that are able to find their way home even if they are hundreds of miles away. Sometimes people use homing pigeons to carry messages over long distances. They fasten messages to the pigeon's legs. Homing pigeons can even find their way home at night. They find their way home by seeing the position of the stars in the sky. Some people have tried blindfolding the homing pigeons by putting little black masks over their eyes. The blindfolded pigeons could not use their eyes. They were able to use the stars to find their way home. All of the pigeons were able to find their way home.

10:11
Module 10: Lesson 2
Selection 4

Pigeons E

Homing pigeons are birds that are able to find their way home even if they are hundreds of miles away. Sometimes people use homing pigeons to carry messages over long distances. They fasten messages to the pigeon's legs. Homing pigeons can even find their way home at night. They find their way home by seeing the position of the stars in the sky. Some people have tried blindfolding the homing pigeons by putting little black masks over their eyes. The blindfolded pigeons cound not use their eyes. Blindfolded pigeons could not see light. The blindfolded pigeons could see the light of the stars. That is how they were all able to find their way home.

Module #11

Topic: RESOLVING COMPREHENSION FAILURES Metaphor: "ROAD REPAIRS"

Introduction

Last week's lesson on the "Road to Reading Disaster" was a metaphor that emphasized the importance of using good comprehension skills. We tried to alert children to the positive effects of cognitive strategies by stressing the negative consequences (i.e., the lack of understanding that results from failure to interact with the meaning of the information in a goal-directed, planful manner). In other words, checking your comprehension pays off, and you can't reach your goal without doing so.

This week's lesson is the logical follow-up: What to do if you notice that you do not understand. Since the "cure" is related to the "disease," we are going to use the same bulletin board and metaphor when we talk about road repair. We plan to teach children how to patch up comprehension failures by using all available resources. This kind of a lesson is common today in many subject areas including math and science where debugging, troubleshooting, double checking, and studying are emphasized.

Rationale

The rationale is simply to teach children what to do when they become aware that they do not understand what they read. In order for you to appreciate their problem more accurately, consider what you do and how you feel when you read information in a foreign language that is only partially comprehended. Skipping words and guessing meaning are defaults and will not promote learning. Children need to know that the answer can often be found in the text itself. Sounding out words, rereading, using context, or using a glossary could all help comprehension. If these don't work, then one can look up the word in a dictionary, ask a friend, parent, or teacher. Since children are often unable to use text resources and cognitive strategies for resolving comprehension failures, it is crucial to teach them explicitly how and why such efforts need to be made. We are not trying to foster children's dependence on other people to make sense of reading. Instead, we are encouraging children to seek out the meaning in various ways and not to give up prematurely.

Objectives

1. To tell children of the necessity for resolving comprehension failures.
2. To tell children that skipping and guessing do not lead to learning.

3. To tell children to reread, use the context, sound out, etc., as comprehension aids.

4. To teach children to use external resources also. Some of these are a dictionary, glossary, and other people.

Instructional Techniques

1. When reading with a child or group, ask what a particular word or phrase means (idioms are good targets). Then ask the child to figure out what it means from context and show how reading ahead and rereading facilitate understanding.

2. Have dictionary or glossary drills for speed and as a subtle means of teaching vocabulary.

3. Discuss when and why you should ask for help with reading. Distinguish assistance from dependence.

4. When children come to the teacher for help in deciphering a word or sentence, ask what strategies they used before they relied on the teacher for the answer. Encourage them to try several strategies on their own before asking someone else for help.

Connections to Bulletin Board Display

The bulletin board will be the same "road to disaster" with repair crews stationed at each problem. The questions for the week are:

1. Did I reread it?

2. Did I use the context before and after?

3. Did I skip or guess anything?

4. Did I ask for help?

References for Resolving Comprehension Failures

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Module 11: Lesson 1

"ROAD REPAIRS"

Objectives

Having identified failures to comprehend, children will recognize that they have several options for "patching up" these failures to comprehend. Specifically, in this first lesson children will be able to employ two strategies to repair word level failures: asking for help, and using the dictionary.

Bulletin Board Questions

1. Did I do "repairs" on the words?
    a. Did I use the context to figure out the words?
    b. Did I look up the words I didn't know?
2. Did I reread to make sure I got the meaning?
3. Did I read ahead to try to get the meaning?
4. Did I ask for help?

Procedures

1. "Remember that our last bulletin board was called 'The Road To Reading Disaster.'"

   "We talked about what will happen if you skip words, don't pay attention to the meaning, and don't ask yourself questions."

2. "Today we have a new bulletin board. Who can read it? Who can tell me what 'repair' means?" (To fix something.) "Yes, today we're going to be in road crews. You're going to fix the problems, so you don't have a reading disaster."

3. "When you come to a word you don't know, what can you do?" (Generate: sound it out, break it into syllables, look it up in the dictionary.)

4. "Is it enough to sound out the word, to be able to say it?" (No, you also have to know the meaning.)

5. "Today we're going to see how good you are at figuring out the meaning, at doing repairs on words."

6. Do the attached worksheet. (Worksheet 1 for 3rd grade, worksheet 2 for 5th grade.) Children look up words and rewrite sentences.

7. Go over worksheets. Remind children to do "repairs" during the week.

Module 11: Lesson 2

"ROAD REPAIRS"

Objectives

Children will be able to use the context to supply missing words. They will be able to read forward and reread, when necessary, to figure out the meaning of a word.

Bulletin Board Questions

1. Did I use the context to figure out the words?
2. Did I read ahead to get the meaning?
3. Did I reread to make sure I got the meaning?

Procedures

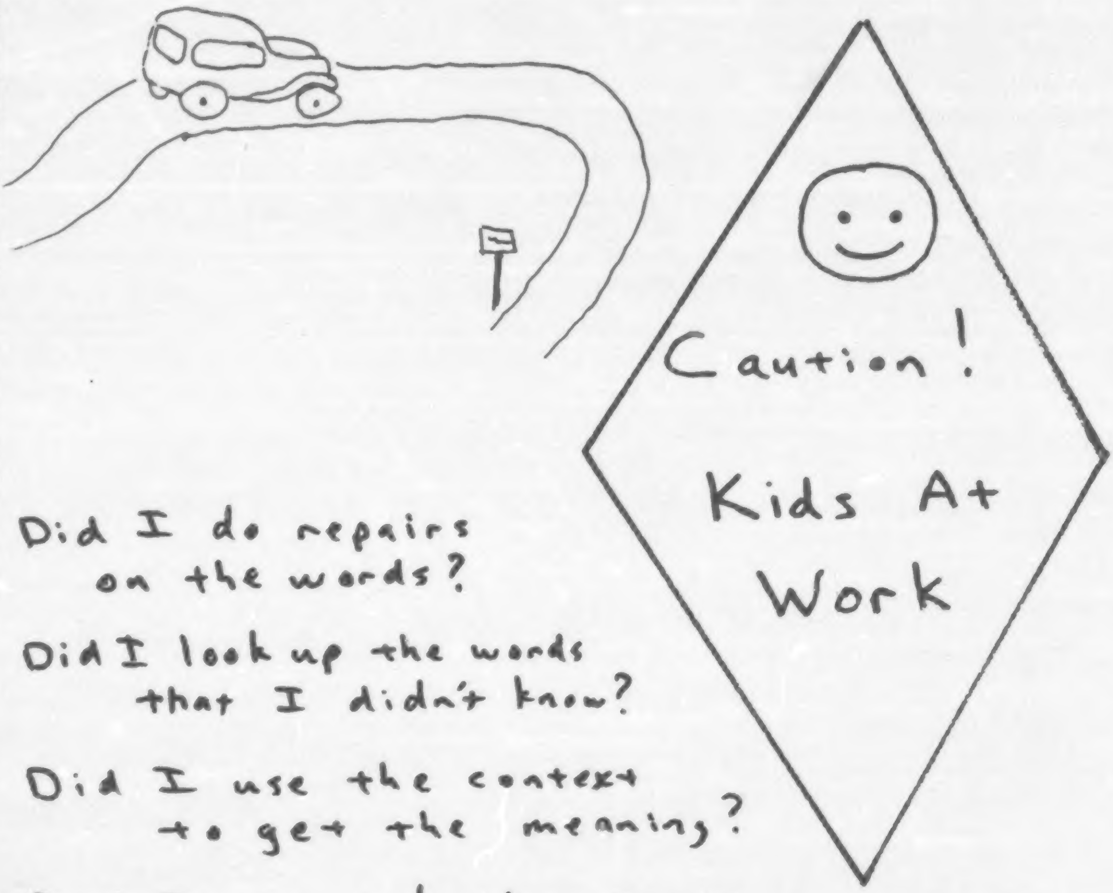
1. Review Lesson 1.
2. "When we make repairs, there are other things we can do besides look up words in the dictionary. We can use context."
3. Elicit from the children the meaning of context if they know it. If they don't know the meaning of context, say, "Context is the words around the one you don't know."
4. "For example (write on the board):

   'A pachyderm is a very large animal with floppy ears.'

   You may not know what a pachyderm is, but you can figure it out from the context -- the words around it." (Have children guess: it's an elephant.)
5. "Today, we're not going to use the dictionary -- we're just going to use the context to get the meaning."
6. "We're going to do a puzzle." Pass out attached sheet. (Worksheet 3 for 3rd grade, worksheet 4 for 5th grade.) "Your job is to fill in the missing words. Use the context, read forward, and reread to get the answers."
7. Children work in pairs.
8. When they're done, correct it and accept any meaning substitutions. Discuss any that don't work.
9. Summary: "You can get the meaning by using context or by looking up words in the dictionary. You can make repairs and get the meaning."

MODULE 11

BULLETIN BOARD



Did I do repairs on the words?

Did I look up the words that I didn't know?

Did I use the context to get the meaning?

Did I reread the parts that I did not understand?

Did I read ahead to see where I was going?

1. The little girl was happy with her new feline.

____

2. Mother got scared yesterday by a rodent in the cupboard.

____

3. Mr. Davis bought a new garment for his spouse.

____

4. When he gave it to her she was extremely content.

____

5. Jane began to mope.

____

6. She was distressed because of her mother's decision about the movie.

____

7. We were relieved when we saw land on the horizon.

____

Module 11: Lesson 1
Worksheet 2

A rodent desired that he possess an overgrown tail similar to a spermophile. A grey fowl, taking pity on the rodent, decreed to him a quantity of plumage. The rodent adhered the plumage to his tail and scurried off filicitously. He perched in a sycamore, extremely content.

A Homosapiens with a revolver ambled forward. He shrieked, "one more spermophile epidermis and my spouse will have sufficient amount of pelt for her outdoors garment."

11:10
Module 11: Lesson 2
Worksheet 3

Dick and his father liked to go camping. Dick asked his father __________ they could go camping __________ the woods. His father __________ him they would go __________ next Saturday.

When Saturday __________ they got up early __________ rode in the car __________ they found an excellent __________ to camp. Father decided __________ they would put up __________ tent by a small __________. They put up their __________ and then gathered some __________ to start a fire. __________ the fire was burning, __________ got some food ready __________ Dick helped him cook __________ over the fire.

After __________ finished eating they watched __________ fire until it was __________ to go to sleep. __________ Dick and father had __________ to sleep something made __________ terribly loud noise and __________ them up. Dick was __________ but Father laughed because __________ was only an airplane __________ over them.

Source: Ekwall Reading Inventory, E. Ekwall, Boston: Allyn and Bacon, 1979.

Module 11: Lesson 2
Worksheet 4

ELEPHANT STORY

The elephant is the largest animal in the world that lives on land. A full-grown elephant _________ have a weight of _________ four tons and may _________ nine feet tall. Because _________ are so large, they _________ no natural enemies other _________ man. Since elephants have _________ few enemies, they are _________ easy to get along _________ and almost always act _________.

Elephants usually live in _________ with around thirty members _________ all ages. A female, _________ lady elephant, is called _________ cow. The herd usually _________ a cow as its _________, who is in charge _________ all the other elephants. _________ the hottest part of _________ day the herd will _________ together and attempt to _________ shade. Near sundown the _________ herd usually goes to _________ nearby river or lake _________ a drink. Elephants normally continue to stay together in a herd for most of their lives.

Source: Ekwall Reading Inventory, E. Ekwall, Boston: Allyn and Bacon, 1979.

Module #12

Topic: SPEED VERSUS ACCURACY Metaphor: "SKIMMING ALONG"

Introduction

During the last three weeks we have concentrated on comprehension-monitoring skills. We have discussed how you detect errors while reading and what can be done to correct comprehension failures. Throughout the lessons we have emphasized the positive value and necessity of activities like rereading and using context. Our last three weeks of lessons build on the same principles but will be applied to study skills. We want to teach children how to plan for later recall, how to intergrate the meaning of the text with other knowledge, and how to use aids and strategies while studying.

This week we are going to concentrate on skimming as a study activity. Skimming is a good way to preview and review the reading material. We are going to focus on teaching children that skimming is a fast method of reading only some words in text. Greater speed usually means less word-for-word accuracy, but skimming can provide an overview of the material. Skimming provides information about passage length and difficulty -- the physical aspects of the material -- as well as a glimpse of the content. We want children to know that if they search for the who, what, where, and why ideas in text while skimming, they can read, learn, and remember the passage better.

Rationale

Children rarely understand the demands of studying. Research on memory and reading skills has shown that 7 to 10 year olds often do not test their own memories and understanding before they signal that they are ready to be tested. Children equate reading with knowing and may not think that anything beyond a single exposure to the information is needed. Rarely do they use strategies for picking out relevant or forgotten information to study. Literal recall of bits and pieces of text is not uncommon. We hope to make children aware that multiple readings aid understanding, and that skimming is a good, quick strategy for getting the general ideas before reading, for checking your understanding afterwards, and for rehearsing and integrating the main points later. We shall focus on these aspects because they are crucial strategies for ensuring comprehension that children (and adults) often do not use spontaneously. This lesson is a synthesis of task evaluation, rounding up the main ideas, and reading speed.

Objectives

1. To teach children an awareness of skimming as:
   a. a preview to meaning,
   b. a preview of task length and difficulty,

   c. a review of main ideas, and

   d. a test of understanding.

2. To teach children that sacrificing word-for-word accuracy for speed is allowed sometimes, and that reading speed can be adjusted for accuracy levels and task demands.

3. To provide practice at skimming quickly for general meaning.

Instructional Techniques

1. An easy way to help children learn to skim is to give them a fixed, brief amount of time (say 30-60 seconds) to skim a story and then to ask questions about difficulty, who, what, why, when, etc., and information at the beginning, middle, and end of the passage. This "previewing drill" can easily be done in groups competitively.

2. A second possibility is to give children a brief (say 3-minute) study period for a passage. You can instruct them to skim as a review technique and assess how well and often they did.

3. Another idea is to record reading rates, skimming rates, and accuracy measures to show children the speed/accuracy trade-off and also to chart their progress in becoming faster readers and better skimmers.

Connection to Bulletin Board Display

We will use a large rabbit hopping along a text from the title to the end to illustrate skimming. The questions on the board are:

1. Did I skim to find out who, what, where, and when?

2. Did I skim to find out what kind of reading this was?

3. Did I skim to find out how long and hard this was?

4. Did I skim quickly?

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Module 12: Lesson 1

"SKIMMING ALONG"

Goals

Children will recognize that reading rate depends on several factors. Skimming is a useful preview technique which leads to faster, more accurate later reading.

Bulletin Board Questions

1. Did I skim to find out who, what, where, why and when?
2. Did I skim to find out what kind of reading this was?
3. Did I skim to find out how long and hard this was?

Procedures

1. "Do you remember that several months ago we talked about speed limits, and I timed you?"
2. Questions.
   a. What is the correct speed for reading?
   b. How fast should you read?
   c. When do you read very fast?
   d. When do you read slowly?

   It all depends. It depends on:

   Purpose

   Type of reading
3. "Let's read our new bulletin board, 'Skimming Along.' What do you think that means? What's the rabbit doing?"
4. "The rabbit is hopping along very quickly. That's what skimming is: it's moving very quickly through your reading. You don't read every word when you skim."

   Question: What words do you read? Refer to the bulletin board questions -- who, what, where, when, and why.

5. "When could you use skimming?"

   Skim first to see where you are going. Then you can read it, and it will go faster. Also, you can use skimming to reread for a review of important information.

6. Pass out papers (see attached) face down. Tell children not to look at them. We are going to find information very quickly today by skimming.

7. Use the following questions one at a time. Tell the children they will skim to find out just one thing. As soon as they have found the answer, they should turn their paper back over and raise their hand.

   a. Questions for 3rd grade selection.*

      1) Skim to find out who the story is about.
      2) Skim to find out where the story takes place.
      3) Skim to find out what Jumbo's problem was.
      4) Skim to find out how Jumbo found out about his problem.
      5) Skim to find out what Jumbo did to try to fix his problem.
      6) Skim to find out who solved his problem.

   b. Questions for 5th grade selection.**

      1) Skim to find out who the main character is.
      2) Skim to find out where the story takes place.
      3) Wally has an unusual pet -- what is it and what's its name?
      4) Skim to find out when the incident takes place.
      5) What happened that spring morning?
      6) Who solved the problem?

8. Discuss: "Do you think that the reading will be harder or easier now that you have skimmed?" "Why" (Have the important information already.)

9. Summarize.

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*Source: Reading Comprehension Skills, Department of Supervision and Instruction, Washington, D. C. Public Schools, Washington, D. C., 1971, p. 108.

**Source: Reading Comprehension Skills, Department of Supervision and Instruction, Washington, D. C. Public Schools, Washington, D. C., 1971, p. 158.

Module 12: Lesson 2

"SKIMMING ALONG"

Objectives

Children will be able to use the information presented earlier in the week to determine the goals for skimming. Also, they will be able to skim quickly to find out the type of reading, the main characters, and then read quickly to find the main idea.

Bulletin Board Questions

1. Did I skim to find out who, what, where, why and when?
2. Did I skim to find out what kind of reading this was?
3. Did I skim to find out how long and hard this was?
4. Did I skim quickly?

Procedures

1. Review Lesson 1. Use the bulletin board to remind the children why we skim (to find out the type of reading, to find out who, what, where, when, etc.).
2. Elicit from children a definition for skimming (e.g., reading very quickly to find out just some important information).
3. Hand out the attached story, "Why the Bear is Stumpy-Tailed," face down. Remind the children not to look at it until we are ready.
4. Ask the children to tell what they should skim for first (e.g., the title). Then explain the attached worksheet so they know that they will write down the information as they get it.
5. Tell the children to skim to find out the title. As soon as they know the answer, they should turn their paper back over and raise their hand (as in Lesson 1).
6. When they have found the title, they write it on their worksheet. Repeat this process for the main characters and type of reading.
7. When that is done, tell the children we will time ourselves in reading the story (time in seconds on the blackboard). They will read to find the main idea.

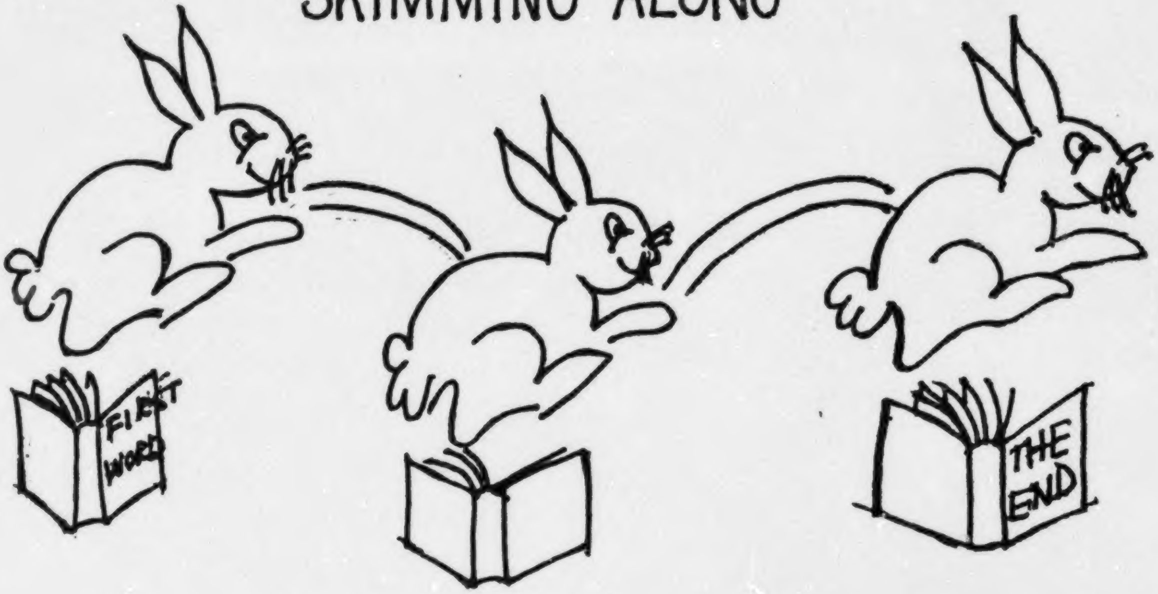
8. If there is time, the same procedure should be planned for a non-fiction piece.

9. Review the week. Emphasize the advantage of skimming as both a preview and review technique. It is useful to increase both speed and memory.

MODULE 12

BULLETIN BOARD

SKIMMING ALONG



DID I SKIM TO FIND OUT WHO, WHAT, WHERE, AND WHEN?

DID I SKIM TO FIND OUT WHAT KIND OF READING THIS WAS?

DID I SKIM TO FIND OUT HOW LONG AND HOW HARD THIS WAS?

DID I SKIM QUICKLY?

There was once an elephant named Jumbo who looked very odd. His legs were so crooked that they looked like question marks.

Jumbo lived all alone. He walked through the jungle all alone. He ate alone. He took his afternoon naps alone.

Jumbo had some bathroom scales. He weighed himself each day and he knew how many tons he was. But, he did not have a mirror. He had never really seen the shape of his legs. His friends never mentioned it. So he never knew exactly how different he looked from the other elephants.

As he was lumbering alone one day, he came upon a large pool. He was surprised to see another elephant in there. Jumbo couldn't help but see that the other elephant's legs looked very strange. "Oh, isn't that awful!" thought Jumbo. He then moved his leg and his friend did, too. When Jumbo turned his head, the other elephant did the very same thing. Then Jumbo began to understand.

Slowly, very slowly, Jumbo leaned over and looked at his legs. "I am not as other elephants are," he thought. He became lost in thought.

The next day he decided to take exercises to help his legs. This didn't work. He tried lifting weights. This didn't help. Jumbo tried everything. He went to the doctor. He even had some different shoes made. He tried having his fortune told. He thought of running away. But nothing helped.

One afternoon he decided to go for a walk. He became very lonely. As he was walking along, he heard a noise. He turned and saw a pretty lady elephant.

"Oh, hello!" she said looking at Jumbo. "What beautiful legs you have!"

Jumbo couldn't believe his ears. His heart was racing. His knees began to knock.

Jumbo and the lady elephant became friends. Before very long, Jumbo and the lady elephant were married. Jumbo stopped feeling sorry for himself, but his legs remained like question marks forever.

About five miles outside of the town of Rookshore, Wally Williams' parents owned a restaurant and a small motel. The motel and the restaurant were located about 75 feet from the road.

Wally helped his parents by doing odd jobs around the place. He sometimes washed the dishes, helped serve the customers, and cleaned the rooms in the motel.

Wally adored animals of all kinds. He had had many different animals as pets. At this time, he had a skunk as a pet which he had named Fragrance. Mother did not like Fragrance because, like all skunks, he could make a very strong smell that people and other animals didn't like. She had instructed Wally never to bring Fragrance near the restaurant and the motel. Wally did not worry about the smell because he knew that it was only for protection. He also knew that if he didn't frighten or hurt the skunk, it would be very friendly. He had tamed Fragrance by giving him a dish of milk every day.

One spring morning when business was very slow, four men walked into the restaurant and sat at a table. Something about the men disturbed Wally's mother and father, but they served them anyway. When the men had finished their meal, one of them took out a gun and demanded all the money in the cash register. The other men had guns also.

It so happened that Wally was passing the window of the restaurant at this time and noticed what was going on inside. He had to do something quickly. He thought about calling the sheriff, but gave that idea up because the robbers would probably be gone before the sheriff could arrive.

Then he thought about Fragrance, his pet skunk. He knew that his mother had told him never to bring Fragrance to the restaurant, but this was an emergency.

He and Fragrance crept as quietly as mice around the door of the restaurant where the men were just backing out. Fragrance rubbed up against one of the robbers. He looked down in surprise. His eyes popped! He lifted his leg to kick Fragrance. He should never have done that! Fragrance shot off his skunk perfume. Everybody ran because the smell was so strong. Wally grabbed one of the guns from the robber. He held the gun on the robbers until his father called the sheriff. Afterwards even mother agreed Fragrance was a great pet.

WHY THE BEAR IS STUMPY-TAILED

Long ago on a winter afternoon, a bear met an old fox, who was carrying a string of fish on his back.

"My!" said the bear. "Where did you get such a fine string of fish?"

Now the fox was as sly as sly could be. He didn't want the bear to know that he hadn't caught the fish himself.

"Ha!" he said with a sly smile. "I caught them myself! I caught them just a little while ago. And I'm thinking how good they will taste for supper. Why don't you catch some yourself?"

The bear was getting hungry, and he wanted some fish at once. So he asked, "What's the best way to catch them?"

The sly fox said, "Go down to the river and cut a hole in the ice. Then put your tail in the hole and wait for the fish to bite.

"When the fish bite your tail, it may sting and hurt a little. But you must sit there as long as you can.

"The longer you sit and keep your tail in the river, the more fish you'll catch. When you think you have caught enough, pull out your tail. Give a hard pull and a strong pull, too.

"Now remember what I've told you."

"Thanks, Brother Fox," said the bear. "It's a queer way to catch fish, but I'll do it, and I surely hope the fish will bite."

"Ha! Ha!" laughed the sly old fox, as the bear ran toward the river.

The hungry bear soon reached the river and cut a hole in the ice. Then he sat so that his tail hung down in the water. While he waited for the fish to bite, he got colder and colder. After a while his tail began to sting and hurt.

It kept stinging and hurting, but the bear didn't get up, because he believed the fish had started to bite.

Late in the afternoon he thought that he had caught enough fish on his tail. Then he tried to stand up and pull out the fish he though he had caught.

But the bear couldn't stand up straight. The water in the hole had turned to ice, and the part of the bear's tail that hung in the river was caught fast.

He was getting as angry as could be when he remembered what the sly fox had told him. So he gave a hard pull and a strong pull, too.

All of a sudden the bear's tail came out of the ice--but only a part of it, and the shorter part at that! The rest of it stayed fast in the ice.

This happened a long time ago, but to this day all bears on earth have short tails.

SKIMMING ALONG

STORY 1

TITLE: ______________________

TYPE OF READING:

FICTION NONFICTION OPINION

MAIN CHARACTERS or TOPIC:

____

MAIN IDEA:

____

____

____

____

TIME: ______________________

STORY 2

TITLE: ______________________

TYPE OF READING:

FICTION NONFICTION OPINION

MAIN CHARACTERS or TOPIC:

____

MAIN IDEA:

____

____

____

____

TIME: ______________________

Module #13

Topic: ABSTRACTING AND HIGHLIGHTING INFORMATION FROM TEXT

Metaphor: FOCUS AND DEVELOP THE BIG PICTURE

Introduction

Studying involves many kinds of behaviors and we all have our preferred methods. Last week we emphasized skimming and rereading quickly for the "gist" of the message as a good technique to preview and review the material. Skimming is a good method for gaining a quick global concept of the literal information. This week we want to teach children other study techniques that can transform the information into the child's own words and ideas and that can help long-term memory.

Underlining is a good way to re-emphasize the main ideas and sequences (i.e., who, what, where, why). Highlighting with markers, underlining, or bracketing sentences and words makes the important parts stand out. These procedures also can make rereading speedy because studying can be confined to the important ideas. Note-taking, paraphrasing, and summarizing are also means of isolating the most important textual information. These latter methods all transform the material into the student's own words and thereby function to help the student assimilate the text. Elaborating the textual information serves to relate the new material to the child's current knowledge. Elaboration includes inferences about what must have happened before an event, the likely consequences of action, actors' intentions and feelings, and a variety of hypotheses about the literal information. This process makes the text personally relevant and also teaches children to approach texts with multiple hypotheses and questions.

Rationale

Our primary purpose in teaching children these skills is to enhance their awareness of the value and benefits of constructive studying. Many children think that rereading, underlining, taking notes, etc. are time-consuming and unnecessary. In addition, many children may be unsure of how to use these skills. Research studies have shown that the abilities to isolate important ideas in text, to underline, and to write notes and summaries are not well developed in most 11-12 year olds. Self-questioning and relating text information to other knowledge are not done frequently by children while reading or studying. Thus, we hope to increase children's understanding of how and why to use these techniques to aid comprehension and memory. Our lessons will emphasize focusing on and developing textual ideas and will use the metaphor of photography.

Objectives

1. To teach children to underline the main ideas in text.
2. To teach children that notes are good checks on understanding and economical study aids.
3. To teach children to ask questions and raise hypotheses about how text information fits with other knowledge.

Instructional Techniques

1. Give children practice with underlining and note-taking and provide feedback about the adequacy of their work. If you have "tests" on the material, be sure to reinforce the positive value of the study techniques.
2. When questioning children's reading comprehension, ask children how the textual information corroborates or contradicts their other knowledge. Force them to reconcile discrepancies between new and old information.
3. After children take notes, have them exchange their notes (or underlining, etc.) with others so that they can compare different methods and ideas.

Connections to Bulletin Board Display

The bulletin board will be a photography metaphor with an emphasis on focusing on the main ideas and then developing related ideas and information. The questions are:

1. Did I focus on the main ideas?
2. Did I underline them?
3. Can I write them in my own words?
4. How does it fit with the other things I know?
5. Did I get the big picture?

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Module 13: Lesson 1

"FOCUS AND DEVELOP THE BIG PICTURE"

Goals

Children will be able to identify the important information in a passage and underline it for rapid rereading. Children will be able to rewrite this information in their own words (take notes) to help recall the memory.

Bulletin Board Questions

1. Did I focus on the main ideas?
2. Did I underline them?
3. Can I write them in my own words?

Procedures

1. Read the bulletin board for the week, "Focus and Develop the Big Picture."
2. What does it mean to focus a picture. Illicit the idea that you have to get it clear, so that you can see the picture easily and distinctly.
3. Say, "That's what we must do in our reading: get a clear picture of what the story says."
4. "What do we focus on when we read?" (The important facts that lead to the main ideas--who, what, where, why, when.)
5. "Today we're going to talk about two ways to help you focus on and remember the important information in a story."
    a. "The first way to help you focus and remember important information is to underline the important information."

       Have the children read the attached stories, a paragraph at a time to decide what is really important. Have them underline that information.

       *"Who was Laika?"--3rd grade
       **"Aeronauts Before Man"--5th grade

---

*"Who was Laika?" Continental Press.

**"Aeronauts Before Man?" by E. F. Moody, in Joys and Journeys, The READ Series, 4th Book, New York: American Book Company, 1968, pp. 262-276.

b. After the children have underlined the important information have one child read just what s/he has underlined. Decide whether that is all the important information that you would need to remember about the story.

c. "Another way that we can focus on the important information is to take notes about what we read. Taking notes means writing down the information in your own words."

d. "Do you write down everything that's in the story when you take notes?" Illicit the concept of writing quickly, in one's own words, the important information.

e. "Using the same story you just read, turn over the sheet and write down notes that would help you remember what was important in the story."

f. Summarize the lesson and ask the children, "Do you think you would remember that story better now that you have focused on the important information by underlining and taking notes?"

Emphasize that this is a helpful thing to do.

Module 13: Lesson 2

"FOCUS AND DEVELOP THE BIG PICTURE"

Goals

Children will be able to identify the important information and use it to "develop" the generalizations or "big ideas" from the information presented. They will recognize the need to use their own information, as well as the text, in "developing" these big ideas.

Bulletin Board Questions

1. Did I focus on the main ideas?
2. Did I underline them?
3. Can I write them in my own words?
4. How does this fit with the other things I know?
5. Did I get the big picture?

Procedures

1. Review Lesson 1, with an emphasis on the importance of focusing on the critical information in a story by underlining or taking notes.
2. Reread the bulletin board and the two new questions. Ask the children what it means to "develop" a picture. You find out what's in it. When you "enlarge" a picture, you make it bigger: you get more information about it.
3. "Today, we are going to get the 'big picture.' We're going to find out what the author said and how that fits with what we already know about the information."
4. Have the children read together and underline the important information:
   a. "Dust Bowl Turns Into a Breadbasket"--3rd grade*
   b. "Spaceship Earth"--5th grade**

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*"Dust Bowl Turns Into a Breadbasket"

**"Spaceship Earth," Dr. Marge Lipson, compilation from various sources.

5. "Is that all of the big picture? Let's find out what else we know and what this is really about."

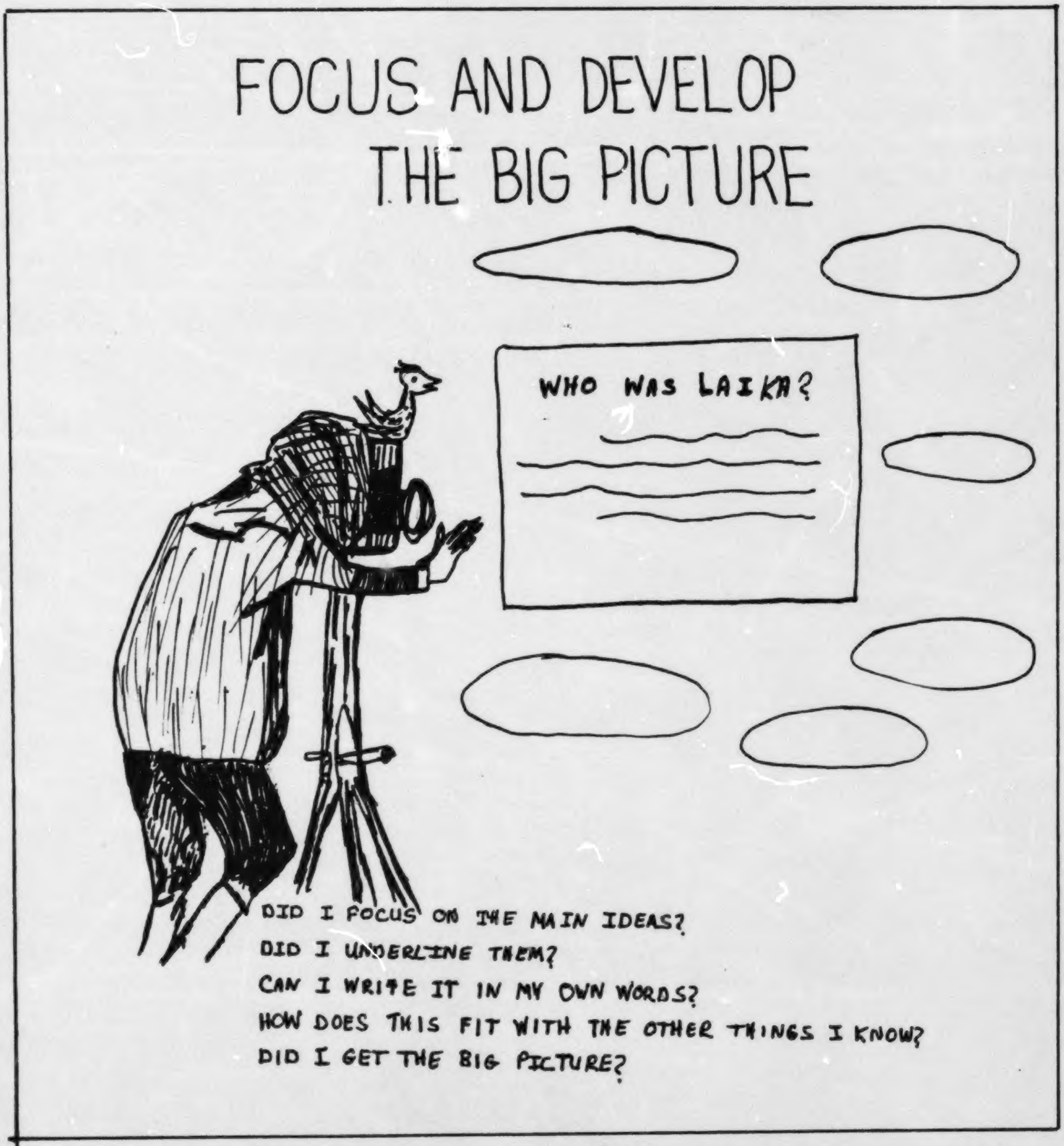
    a. Third grade: Develop the theme that erosion by wind and water destroys the soil and that there are things that farmers must do in order to prevent this. The big idea is "Conservation," so think about other conservation concerns. (Children likely will think of pollution of water and air and saving animals.)

    b. Fifth grade: Similarly, develop the big theme of "Ecology," that we live within a closed, interdependent system. Resources may not be replenished. The other big idea is that "Humans are the major offenders": They are the primary cause of upsets with the balance of the system. Elicit this by encouraging the children to talk about what the story reminded them of, what they know about it besides what's in the story.

6. Summarize the week's lessons by reminding them that they must focus on what the author said, think about what they already know, and then get the "big picture" which is more than either one.

MODULE 13

BULLETIN BOARD



FOCUS AND DEVELOP THE BIG PICTURE

WHO WAS LAIKA?

DID I FOCUS ON THE MAIN IDEAS?
DID I UNDERLINE THEM?
CAN I WRITE IT IN MY OWN WORDS?
HOW DOES THIS FIT WITH THE OTHER THINGS I KNOW?
DID I GET THE BIG PICTURE?

WHO WAS LAIKA?

People first heard about Laika in 1957. On November 3, 1957, Russia sent a satellite into space. It was called Sputnik 2. The world's first space traveler was on board. She was a dog named Laika. Laika means "barker."

Until Sputnik 2 went up, no one knew what would happen to living things in space. Could animals live there? Could people travel safely in spaceships? What dangers would animals face in space? Laika's trip answered many of these questions.

For seven days, the dog circled the earth. She lived in a special cabin that was air-conditioned for her. Laika barked and moved about. She got food the same way she had been trained to get it on earth. The dog was well and happy.

People on earth were learning that animals could survive in space. Perhaps men and women could be space travelers too.

The Russians didn't know how to bring Laika back to earth, so Laika died in Sputnik 2. She gave her life so people could learn about safe space travel. This dog's spaceship is sometimes called Mutnik 2.

AERONAUTS BEFORE MAN

Men have always wondered at the things the little spider can do. He has one ability quite suited to these times - the ability to move through the air without wings. Long before man could fly, members of the spider family were aeronauts. All spiders are born knowing how to float on air.

To do this, the spider uses threads of his own silk. We say he "spins" the silk. Really, it is produced inside the spider's body in what are called silk glands.

When it is first made, the silk is liquid, flowing like water as other liquids do. Before it can harden into something like the silk we know, it must flow through the spider's body to the "spinnerets." Hundreds of tiny tubes connect the silk glands to the spinnerets, and it is through them the liquid flows.

In order to move through the air, a spider climbs to the top of a leaf, or a tall blade of grass. Since the spinnerets are on the underside of his body, the spider turns over on his back with the spinnerets facing upwards. The moving air brushes across them and the liquid silk is pulled out, hardening instantly and becoming long, strong threads. These are carried upward with the rising air.

One thread is not enough to lift the spider from his blade of grass. All the silken threads, moving steadily upward, act as a balloon to lift the spider and carry him aloft. Then he travels wherever the wind blows him.

Though the spider cannot guide his flight, he can come down when he chooses. He just pulls in his threads. As they become shorter, he sinks slowly down. His balloon has become a parachute. When he lands, he rolls up his parachute like a good aeronaut, and goes exploring on the ground.

DUST BOWL TURNS INTO A BREADBASKET

Several years ago, windstorms blew so much soil from a part of the Middle West that it became known as the Dust Bowl. Farmers left their farms. For a while, it looked as if the Dust Bowl would turn into a desert. Then our government started the fight to save the soil. Men planted a shelter belt of trees to break the winds which blow over the plains. Men also planted honeysuckle, sumac, and other plants which cling to the ground with their many roots. Farmers dug ditches through their fields and built dams and lakes to hold back the water to keep it from washing away the topsoil.

After a while, heavy rains came and helped man in his battle to save the soil. Farmers went back to their fields. Many cut good crops of wheat to be made into bread. Now, parts of the Dust Bowl are again green with growing crops. The air is made sweet by blooming honeysuckle, lilac, and other sweet smelling blossoms.

Our big battle to save the soil has only begun. Billions of dollars have already been spent, for battles of all kinds are costly. Many more billions must be spent before the fight to save the soil is won. The money will not be wasted. It will be paid back in crops and lives saved.

SPACESHIP EARTH

Earth is like a spaceship. The people, plants, and animals are its passengers as it whirls around the sun. Earth is not like the spaceships that went to the moon. It cannot be loaded with new supplies. It will never stop. Junk cannot be thrown off the earth. And, there is no second Earth waiting if this one doesn't work. All that Earth's passengers can do is take care of the spaceship and each other.

Today the Earth is low on supplies, and it is getting crowded and dirty. People are killing off the plant and animal passengers. Have you ever broken an antique or lost a photograph of someone special. If so, you have that feeling that something is "gone forever" - it cannot be replaced.

"Gone forever" is a special happening in the animal world. Since 1600 we have lost 40 different kinds of mammals and 94 different kinds of birds. We have no pictures of most extinct animals. We have no tape recordings of their sounds. We cannot feed them or watch them move and care for their young. Today hundreds of plants and animals are in danger of extinction.

Species become extinct when not enough young are born to replace the animals that die in each generation. Animals are becoming extinct for lots of reasons. Their habitats are being destroyed.

Module #14

FINAL REVIEW: LESSON 1

Goals

Children will be able to recall the key ideas which have been presented throughout the lessons. They will be able to tell what "plans" should be made for the reading trip, what activities need to be done while they are reading, and how they can go about "rounding up" their ideas to generate a summary and a main idea. Finally, they should be able to articulate what "disasters" will befall them if they don't do these things.

Bulletin Board Questions

1. What do you do to plan your reading trip?
2. What kinds of reading trips are there? (Fiction, nonfiction, opinion.)
3. What is the goal of the reading trip? (Meaning.)
4. What are the three kinds of meaning? (Literal, inferential, and personal.)
5. What ideas do we have to round up in order to give a summary and get the main idea? (Title, setting, characters, action, outcomes --who, what, where, why, how.)
6. Is it all right if you don't do these things? What happens if you don't?

Procedures

1. Remind the children that this is a review. We are going to try to remember all the things we've been talking about since September.
2. Refer the children to the "mock-up" bulletin board.* "Remember when we did this lesson?"
    a. "Who can read the title?"
    b. "Let's review the things we do before we take a reading trip. What are the plans we have to make?"
        1) "Ask yourself questions. What kind of reading is this? How long is it? What is it about? Why am I reading this?"
        2) "Get ready to read. What do you do?" Get to a quiet place, read the title, etc.

* Pick out several pieces from previous bulletin boards and assemble into "mock boards."

c. "Now, what do you have to do while you're reading?"

   1) "Obey the signs. What do they tell us?"
      Stop and Think
      Go Back and Reread
      Yield to the Words You Don't Know
      Slow Down if its Hard

   2) "What signs are there in our reading that tell us to slow down, stop and think?" (Commas, periods, paragraphs.)

d. "Where are we going on this reading trip? What's the goal of reading?" (Meaning.)

3. "Is there just one kind of meaning?" Put a lightbulb on the board.

   a. "No, there are three kinds of meaning. What's one kind?"
      Label each lightbulb as the children tell the answer.

   b. Get children to explain each kind of meaning.

4. "Today, we are going to see if we can get the meanings from a story."

   a. Have the children read the chart story.* Remind them to Stop and Think, to be sure to get the meaning, to stop for unknown words.

   b. "Now we must round up our ideas. What are the things we have to know about in order to get a summary and a main idea?"

      1) Setting

      2) Characters

      3) Action

      4) Outcomes

      5) Where, when, who, what, why, how

   c. Put all of these things in the lightbulb on the board.

   d. "Who thinks they can do a summary of this story? Did that summary have all the important ideas?"

   e. "Now, let's see if we got the main idea." Put the two morals on the board. Read and choose the right one? (Is the main idea literal, inferential or personal?)

   f. Judgement: "What kind of reading was this?" (Fact, fiction or opinion?)

5. "That was super! But, what happens if we don't do these things: is it ok?" Elicit that we'll get on the road to reading disaster. We won't get the meaning.

*Copy the grade appropriate selection on a chart or on the board for the group session.

Materials

"The Ant and the Grasshopper," by Aesop. In The Fables of Aesop, edited by Joseph Jacobs, Illustrated by Kurt Wiese. New York: MacMillan, 1950, p. 71.

"The Shepherd Boy," by Aesop. In The Fables of Aesop, edited by Joseph Jacobs, Illustrated by Kurt Wiese. New York: MacMillan, 1950, p. 85.

FINAL REVIEW: LESSON 2

Goals

Children will be able to recall the key ideas which have been presented throughout the lessons. They will be able to tell what "plans" should be made for the reading trip, what activities need to be done while they are reading, and how they can go about "rounding up" their ideas to generate a summary and a main idea. Finally, they should be able to articulate what "disasters" will befall them if they don't do these things.

Bulletin Board Questions

1. What do you do to plan your reading trip?
2. What kinds of reading trips are there? (Fiction, nonfiction, opinion.)
3. What is the goal of the reading trip? (Meaning.)
4. What are the three kinds of meaning? (Literal, inferential, and personal.)
5. What ideas do we have to round up in order to give a summary and get the main idea? (Title, setting, characters, action, outcomes --who, what, where, why, how.)
6. Is it all right if you don't do these things? What happens if you don't?

Procedures

1. Review weeks using bulletin boards.
    a. Reading is Like a Puzzle
    b. Be a Reading Detective
    c. Tracking Down the Main Idea
    d. Infer the Hidden Meaning
    e. Road Repair
    f. Skimming Along
2. Pass out story, face down (see attached).

3. Demonstrate skimming. Each child has his own copy of the story.

   a. Third grade: "The Ground Cuckoo"

   b. Fifth grade: "The Marvelous Monster"

   Ask each question separately:

   a. Who?

   b. What?

   c. Where?

   d. When?

   e. What kind of reading?

4. Read chart story together (Copy story onto large chart or blackboard).

5. Focus. Underline the important parts. Children come up to the board or chart to underline.

6. Develop. Experience/inference.

   a. Third grade: "The Ground Cuckoo"*
      1) Where have you heard of this bird before? (cartoons)
      2) What do you know about it?
      3) How does the Ground Cuckoo help man? How does eating lizards, insects and rattlesnakes help?
      4) What is the enemy of the Ground Cuckoo?
      5) What kind of habitat does it have?
      6) What's unusual about it? It runs and flys.
      7) How do birds help us?

   b. Fifth grade: "The Marvelous Monster"* *
      1) Discuss impressions people had of the horseless carriage.
      2) What's a fad? List some.
      3) How has the auto changed the society?

Materials

*"The Ground Cuckoo," by N.J. Silvaroli. In Classroom Reading Inventory. Iowa: Wm. C. Brown, 1976.

**"The Marvelous Monster" in Joys and Journeys, The READ Series, Book 4, New York: American Book Company, 1968, pp. 339-341.

THE ANT AND THE GRASSHOPPER

In a field one summer's day a Grasshopper was hopping about, chirping and singing to its heart's content. An Ant passed by, bearing along with great toil an ear of corn he was taking to the nest.

"Why not come and chat with me," said the Grasshopper, "instead of toiling and moiling in that way?"

"I am helping to lay up food for the winter," said the Ant, "and recommend you to do the same."

"Why bother about winter?" said the Grasshopper, "we have got plenty of food at present." But the Ant went on its way and continued its toil. When the winter came the Grasshopper had no food, and found itself dying of hunger, while it saw the ants distributing every day corn and grain from the stores they had collected in the summer. Then the Grasshopper knew

Moral choices: It is best to prepare for the days of necessity (correct).
or Little by little does the trick. (incorrect).

THE SHEPHERD BOY

There was once a young Shepherd Boy who tended his sheep at the foot of a mountain near a dark forest. It was rather lonely for him all day, so he thought upon a plan by which he could get a little company and some excitement. He rushed down towards the village calling out "Wolf, Wolf," and the villagers came out to meet him, and some of them stopped with him for a considerable time. This pleased the boy so much that a few days afterwards he tried the same trick, and again the villagers came to his help. But shortly after this a Wolf actually did come out from the forest, and began to worry the sheep, and the boy of course cried out "Wolf, Wolf," still louder than before. But this time the villagers, who had been fooled twice before, thought the boy was again deceiving them, and nobody stirred to come to his help. So the Wolf made a good meal off the boy's flock, and when the boy complained, the wise man of the village said:

Moral choices: A liar will not be believed, even when he speaks the truth. (correct)
or Appearances may be deceptive. (incorrect).

THE GROUND-CUCKOO

The Ground-Cuckoo is an unusual bird. He is about 24 inches long, including his tail which is very long. He also has a long beak and a crested head. You will find him in the Southwestern United States.

This bird is helpful to man in many ways. He catches small lizards, insects, and even young rattlesnakes for food. His great speed in running along the ground helps him to do this.

Some people make a pet of the Ground-Cuckoo. They can be trained to catch mice and other house pests.

You may know this bird by another name. He is also called a Road Runner.

THE MARVELOUS MONSTER

The horseless carriage didn't begin in the United States. It began in France. The first horseless carriage was driven by steam and was built in 1769 in Paris.

When England began to make steam carriages, the speed limit was just 4 miles per hour. A man carrying a red flag had to walk in front of the carriage by day; at night he had to carry a red light.

Steam carriages were not very satisfactory, and soon man began to experiment with gas engines. In April, 1892, the first gasoline car drove through the town of Springfield, Massachusetts.

The change from the horse and buggy to the mechanical marvel that could travel 10 miles an hour was a big one. Many people thought the machine was dangerous. Instead of a "marvel" they called it a "monster." Some people thought that the fad would die out in a year or two. But the automobile was not a fad, and it did not die out in a year or two.

The mechanical marvel changed America. Horses were no longer needed. Saddle makers and blacksmiths did not have jobs. Roads had to be built because the old country lanes were not good for the new machines. Instead of hay, automobiles "eat" gas, so today there are gas stations all over the roads to keep the cars going.